Bulletin 373 July, 1935

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FOOD PRODUCTS

AND THE TWENTY-SEVENTH REPORT ON

DRUG PRODUCTS

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CONTENTS AND SUMMARY—*Concluded*

THE THIRTY-NINTH REPORT ON FOOD PRODUCTS AND THE TWENTY-SEVENTH REPORT ON DRUGS

E. M. Bailey

The following report summarizes examinations of foods and drugs submitted by the Dairy and Food Commissioner for purposes of official control for the year 1934. Included also are analytical and other data upon products and materials sampled by, or submitted to, the Station for examination.

Collaboration with the Department of Soils and with the Tobacco Substation has involved analyses of 91 samples of tobacco for ash constituents, representing 499 analytical determinations. Other collaborative work is cited in the text.

In all, 1,814 samples of foods, drugs and miscellaneous materials have been examined, and 2,683 pieces of Babcock glassware, etc., have been checked and certified during the year.

The loyal and efficient coöperation of the department staff in carrying on this work is gratefully acknowledged. This includes not only the actual analytical work involved but helpful information and advice on many inquiries that come to the department through correspondence and otherwise.

ROLE OF THE STATION IN FOOD AND DRUG CONTROL IN CONNECTICUT

Legal Control Measures

The Station's interest in foods, their composition and possible adulterations, began almost at the date of its founding in 1875. In 1877 the Station announced the services it was prepared to render for the use and benefit of citizens of the State. These included the examination or analysis of fertilizers, feeding stuffs, seeds, soils, waters, agricultural materials and products, grasses, weeds and insects; and advice on matters of agricultural science. Thus was the act establishing the Station "for the advancement of agriculture by scientific investigation and experiment" interpreted.

The agricultural food products first considered were milk, butter, vinegar and molasses, and considerable attention was devoted to methods of analysis and to means of detecting adulterations in these articles. Results were published for the information and benefit of the public.

In 1886 the General Assembly passed an act "To Prevent and Punish Fraud" (in foods) and created the office of "Dairy Commissioner", charged with collection and examination of samples suspected of being "imitation butter". The act provided that the Commissioner might have the samples analyzed by the Connecticut Agricultural Experiment Station or by a state chemist; but the samples were in practice submitted to the Station for examination. Thereafter the Dairy Commissioner's duties were extended to include examinations of vinegar and molasses. The Station performed the analytical work required gratuitously, as a matter of coöperation, and furnished expert testimony in court whenever desired.

In 1895 a general food law was passed. It required the Experiment Station to collect and examine samples and to publish an annual report thereon. It required also that in the event violations of the law were discovered the Station should transmit the facts to local grand jurors or prosecutors. Enforcement rested with the prosecuting authorities. The Station was not required to prosecute violations beyond acquainting the proper authorities with the results of analysis indicating the violations.

This law did not supersede the duties placed upon the Dairy Commissioner and he continued to exercise control over the items charged to his jurisdiction. The Station continued to do the analytical work required by him.

The Connecticut Station was the first Agricultural Experiment Station in this country to be delegated by act of legislature to exercise control over foods as regards fraud and adulteration. Other state experiment stations were later similarly delegated: Kentucky in 1898, North Dakota and Wyoming in 1903, and Maine in 1905.

In 1907, after passage of the Federal Food and Drugs Act, the state law of 1895 was revised to conform to the Federal Act and accordingly its scope extended to include drugs. This act empowered the Dairy and Food Commissioner and the Connecticut Agricultural Experiment Station to take samples for inspection purposes but the Commissioner was charged with enforcement. It differed from the preceding act in that it designated a definite enforcing authority. The Station, however, continued to perform the analytical work necessary to establish the evidence of adulteration or misbranding, making reports of violations to the Commissioner.

There are other special statutes relating in detail to certain food products and other articles, such as milk, ice cream, carbonated beverages, turpentine, toilet preparations (wood alcohol), which the Commissioner enforces. In these, as in other cases, he looks to the Station for the evidence of violations.

Contributions of the Station to Food and Drug Investigation Apart from Legal Control Measures

Food control depends upon knowledge of the composition of foods and drugs and methods for the detection of adulteration. The Station has done much pioneer work in this field, beginning with studies of milk, cream, butter and molasses in the early days of its service and continuing to the present time. Among its contributions are studies of composition and methods for the analysis of carbonated beverages, flavoring extracts,

cacao products, spices, so-called diabetic foods, drugs and proprietary remedies; microscopic studies of many vegetable foods; and compilations of analyses of foods, feeding stuffs, proprietary remedies and insecticides.

Representatives of the Station have served also on national organizations and committees having to do with problems of food and drug control. These include the Association of Official Agricultural Chemists (of which the Station has had the unique record of having five members of its staff serve as president in the period 1884 to 1930), the Food Standards Committee of the U. S. Department of Agriculture, Committee on Foods and the Council on Pharmacy and Chemistry of the American Medical Association.

ECONOMY OF SERVICE

The Station is charged with various types of control service including fertilizers, feeding stuffs, insecticides, as well as foods and drugs.

It is also called upon for much miscellaneous work of a coöperative nature for other state departments, such as Commission on Domestic Animals and Commission on Fisheries and Game, Water Commission, state and local Boards of Health, and the Storrs Experiment Station.

All of these activities are carried on by the staff of the Department of Analytical Chemistry.

By arrangement with the Department of Biochemistry, facilities and expert service are available for carrying on bio-assays for vitamin content of vitamin D milk.

PHILOSOPHY OF CONTROL MEASURES

From this summary it is apparent that the philosophy of control measures relating to foods and drugs, and to other materials in which the Station is interested, is to regard the Station as a fact-finding agency concerned with the objective examination of products and proper interpretation of the results of such examinations, but to leave the enforcement features of such measures to other authority. Mutual understanding and coöperation between the agencies charged with these separate features are essential and have always been maintained. Both functions are necessary to effective control. Each involves qualifications and abilities of distinctly different types, and the logic of keeping them separate, but coördinated, has been recognized in the legislation on these matters for the last 50 years.

FOODS

SPRAY RESIDUE ON APPLES

Thirty-three samples of apples were examined for excess spray residue. Growers have avoided late spraying operations and for the most part the fruit examined has been within the tolerance for arsenic and lead. In only one case was marketed fruit found in excess of the tolerance. All other samples were taken at the orchard or submitted by the grower to

determine their marketability with reference to spray residue. The tolerance for the season 1934 was 0.01 grain per pound for arsenic (As_2O_3), and 0.019 per pound for lead (metallic). The limit fixed for arsenic for the season 1935 is the same as for the previous year; for lead it is reduced to 0.018 grain per pound.

BEVERAGES

Carbonated Beverages

One hundred and thirty-eight samples of carbonated beverages were examined. Most of them were submitted by the Dairy and Food Commissioner. The minimum standard of sugar content, 5 per cent, was exceeded in all cases and no saccharin was detected. One sample, lemon and lime soda, was artificially colored without declaration.

Miscellaneous Beverages

60721. *Sweet Cider.* The sample contained no artificial color and no saccharin or preservative was found. It contained 1.88 per cent of alcohol. The cider was in process of fermentation but was still sweet.

56969. *Claret Wine.* San Benito brand. Great Atlantic and Pacific Tea Co., Greenwich. Net contents and alcoholic content were correctly stated. Alcohol declared, not over 14 per cent by volume; found, 12.48 per cent. Net contents declared, 25.6 fluid ounces; found, 25.5 fluid ounces.

CHEESE

Four samples of cheese were suspected of containing fat other than milk fat, but the refraction and Reichert-Meissl No. of the extracted fat were normal for milk fat in both cases.

Two other samples, one of cottage cheese and one of Gorgonzola cheese, were examined and passed.

COFFEE, ETC.

Fifty-one samples of coffee and mixtures of coffee and other materials were examined. All except ten of these were submitted by the Dairy and Food Commissioner.

The following official samples, listed in Table 1, were sold as coffee. In none of them was evidence of chicory or other admixture found, and the articles were passed as labelled.

TABLE 1. BRANDS OF COFFEE NOT FOUND ADULTERATED

No.	Town[1] Brand and Dealer	Packed for or by
	Danielson	
57562	Fellsmere, Araban Coffee Co., Inc., Boston, Mass.	Boston Meat Market
	Hartford	
57481	Astor, B. Fischer & Co., New York, N. Y.	International Meat Market
57476	Bliss, General Foods Sales Co., New York, N. Y.	Roma Importing Co.
57480	Boulevard, Williams & Carlton Co., East Hartford	International Meat Market
57484	Brown Berry, Wm. Boardman & Sons Co., Hartford	International Meat Market
57485	Gold Star, Wm. Boardman & Sons Co., Hartford	V. Orsini
57475	Greek, Apollo Coffee Co., Peabody, Mass.	Victoria Importing Co.
57482	Holland House, Geo. F. Wiemann Co., New York, N. Y.	International Meat Market
57474	King Othon, Greek-Arabian Coffee Co., New York, N. Y.	International Importing Co.
57483	Putnam, Wm. Boardman & Sons Co., Hartford	International Meat Market
57478	Satisfaction, General Foods Sales Co., Inc., New York, N. Y.	International Meat Market
57477	Seven Day, Arbuckle Bros., New York, N. Y.	International Meat Market
57479	Square Deal, R. C. Williams & Co., Inc., New York, N. Y.	International Meat Market
	Meriden	
57471	Beech-Nut, Beech-Nut Packing Co., Canajoharie, N. Y.	New Wonder Market
57473	Bosa Quality, Eppens, Smith Co., Inc., New York, N. Y.	New Wonder Market
57468	Chase & Sanborn, Chase & Sanborn Co., New York, N. Y.	New Wonder Market
57486	Ehlers' Grade A, Albert Ehlers, Inc., Brooklyn, N. Y.	New York Olive Oil & Cheese Co.
57487	Krasdale, A. Krasne, New York, N. Y.	New Wonder Market
57464	Kybo, First National Stores	First National Stores
57465	Medaglia, S. A. Schonbrunn & Co., Inc., New York, N. Y.	Napoli Importing Co.
57472	Maxwell House, Maxwell House Products Co., Nashville, Tenn.	New Wonder Market
57466	Red Seal, Old Dutch Mills, New York, N. Y.	Napoli Importing Co.
57467	Roma's Rose, Roma Importing Co., Inc.	Napoli Importing Co.
57470	Royal Scarlet, R. C. Williams & Co., Inc., New York, N. Y.	New Wonder Market
57469	White Rose, Seeman Bros., Inc., New York, N. Y.	New Wonder Market
	New Haven	
57491	Alice Foote MacDougal, Alice Foote MacDougal, New York, N. Y.	E. Schoenberger & Sons
57497	Bokar, Great Atlantic & Pacific Tea Co., New York, N. Y.	Great A. & P. Tea Co.
57498	Condor, American Coffee Corp., New York, N. Y.	Great A. & P. Tea Co.

TABLE 1. BRANDS OF COFFEE NOT FOUND ADULTERATED—*Concluded*

No.	Town	Brand and Dealer	Packed for or by
57494		Del Monte, California Packing Corp., San Francisco, Calif.	E. Schoenberger & Sons
57489		Ehlers' Dixie House, Albert Ehlers, Inc., Brooklyn, N. Y.	E. Schoenberger & Sons
57499		High Noon, Ragus Packing Corp., Long Island City, N. Y.	Joe's Market
57492		Hills Bros., Hills Bros., San Francisco, Calif.	E. Schoenberger & Sons
57490		Lipton's, Thomas J. Lipton, Inc., Hoboken, N. J.	E. Schoenberger & Sons
57495		Sunbeam Pure Food, Austin, Nichols & Co., Inc., New Haven	E. Schoenberger & Sons
57496		Yuban, Arbuckle Bros., New York, N. Y.	E. Schoenberger & Sons
	So. Manchester		
56990		Hale's Red Bag, J. W. Hale Co., So. Manchester	Own make
	Willimantic		
56965		Ames Golden Roast, S. K. Ames, Inc., Boston, Mass.	S. K. Ames, Inc.

Four samples were not labelled as coffee. One, 59211, was "20th Century Coffee and Chicory". It consisted largely of coffee with some chicory present. There was no objection taken to the article as labelled. Sample 59212, was labelled "Health Breakfast Cup". It was a mixture of coffee, chicory and material that appeared to be roasted pea coats. The caffeine content was 0.73 per cent, which is a little more than half the usual caffeine content of coffee (1.2 per cent). The label is not objectionable except that the qualification "health" is not warranted for any food. Health depends on many other factors than those of diet. Numbers 57488 and 57493, *Kaffee Hag* and *Sanka,* respectively, are coffees from which practically all caffeine has been removed.

Nine samples of straight coffee and coffee mixtures were examined for the State N. R. A. Compliance Director of Hartford; and one was examined for investigational purposes.

CONFECTIONERY

The Statute prohibits the sale of confectionery containing any alcohol. Samples were examined for the Dairy and Food Commissioner as follows:

TABLE 2. ALCOHOL IN CONFECTIONERY

No.	Place of sampling	Alcohol by weight in liquid portion of candy %
56972	Howard Ice Cream Parlor, New Haven	11.93
57450	Loft's Inc., New Haven	0.12
57451	Edw. Malley Co., New Haven	0.14
57452	Maltos Bros., Milford	no liquid
57454	Chocolate Shop, Waterbury	0.07
57455	Economy Candy Shop, Waterbury	0.34
57456	Joe Nardelli, Waterbury	14.34
57457	Shanahan Drug Store, Hartford	11.10
57458	Parkview Pharmacy, Middletown	11.47
57459	Central Drug Store, Middletown	11.42
57460	Peoples Drug Store, East Hartford	10.60
57461	Christy Sweet Shop, Danielson	0.20
57462	W. B. Noble Drug Store, East Hartford	17.21
57463	Corner Soda Shop, East Hartford	18.11

Traces of alcohol were not regarded as significant as they might be due to the flavoring extracts used, and samples showing from 0.1 to 0.3 per cent of alcohol were passed. The dealers above mentioned, except Loft, Inc., were not the manufacturers of this confectionery. The objectionable stock was withdrawn from local distribution, and federal inspectors, who were making a survey at the same time, investigated the interstate features of the problem.

7228. *Chocolate Cocktails,* Kresge's, New Haven, submitted by the City Department of Health, New Haven, contained no alcohol.

EGGS AND EGG PRODUCTS

Shell Eggs

Eighteen samples of eggs have been examined for the Dairy and Food Commissioner and five samples for public institutions. Six of the official samples were labelled as fresh and were passed as labelled. Twelve samples were misbranded. The misbranding was due to failure to display a sign or label denoting the eggs to be "cold storage" or "preserved", or to the fact that the eggs were represented to be fresh when not of that character.

The distinction between fresh eggs and others has been based on candling, the character of the egg on breaking out of the shell, and the ammoniacal nitrogen content determined by an adaptation of the Folin method. State specifications for "fresh" eggs are as follows: Air cells not more than one-quarter inch in depth, localized and regular; whites firm and clear; yolks may be visible; no visible germ development. The

specifications contain no limit for ammoniacal nitrogen content but our experience has shown that 1.8 milligrams per 100 grams of egg is a fair upper limit for ammoniacal nitrogen in fresh eggs. Dipping eggs in an oil bath tends to prevent deterioration and this is often done commercially, a preservative feature that enhances keeping qualities. The statutes require that eggs that are not fresh be labelled to show their character and quality, i.e. "preserved", "cold storage" or "incubated", as the case may be.

Egg Noodles

Five samples of egg noodles were examined for artificial color. A pronounced shade of yellow does not necessarily indicate that noodles are dyed as the egg yolk used is sufficient to produce a rather marked degree of coloration. No artificial color was found in any of the samples submitted. The samples examined were as follows:

No.	Brand (as labelled or stated by dealer)
57232	*Prince,* Prince Macaroni Mfg. Co., Boston, Mass.
57233	*Atlantic,* Atlantic Macaroni Mfg. Co., Long Island City, N. Y.
57234	*Mayfair Club,* S. Viviano Macaroni Mfg. Co., Carnegie, Pa.
57235	*Ceruso,* Atlantic Macaroni Mfg. Co., Long Island City, N. Y.
57236	*De Lux,* V. Viviano & Bros., St. Louis, Mo.

FATS AND OILS

Butter

One of the earliest of food frauds recorded here was the sale of oleomargarine for butter. In the early days of food control this practice was not uncommon, but in recent years it has become so rare as to be hardly more than a matter of historical interest. During the past year the Dairy and Food Commissioner coöperated with Federal agents who were investigating butter, and a number of samples submitted to us as butter were shown to be oleo. It developed that local dealers had been supplied with the spurious article by a manufacturer or distributor in this State who, in turn, was a member of a group operating in neighboring states. The Government traced this lucrative scheme to Boston, where it appears to have originated. The ring was broken up and those responsible were penalized by fines, or imprisonment, or both. The public should understand that there is no objection to oleomargarine as a food, or to its manufacture and sale when conforming to regulations. The offense is selling it as and for another article.

Eight samples taken in and around Hartford were found to be fraudulent and were traced to an operator in the vicinity. The products were sold as Country Roll Creamery Butter. The moisture content was not excessive and the fat was above 80 per cent, but the Reichert-Meissl values were of the order of 0.8 to 2.6, and the Polenski values, 0.2 to 1.3.

One sample was found deficient in fat and high in moisture; and another, submitted by the State Police Department, was a "pound" print that was four-fifths of an ounce short weight.

Thirty-four official samples were passed as genuine butter.

Six samples were examined for health officers and others.

The total from all sources was 50, of which 8 were oleomargarine, one below standard in fat and one short weight.

Olive Oil and Other Edible Oils

World production of olive oil is estimated at about two billion pounds per year. For centuries Italy was the chief producing country, but at present she ranks second to Spain, and Greece ranks third.

Olive oil is obtained from the fruit of the tree *Olea europoea* of which there are said to be about three hundred varieties. Production is largely from cultivated trees, but a considerable amount is taken from trees growing wild. The oil content of olives varies widely with climatic and other conditions. In European countries olives usually contain 30 per cent or more of oil; domestic olives and those grown in South America and Australia are less rich in oil.

Various methods are used for expressing the oil for commercial purposes. The older processes involve two or more pressings. Oil referred to as "virgin", "sublime", or "superfine" is the first run obtained with low pressure. Higher pressure is used in the second pressing, and when further pressings are made, the press cake is first ground and mixed with warm water. Oil obtained after the second pressing is of inferior quality. The final press cake contains a residuum of oil which, if recovered, is usually extracted by means of carbon disulphide or other solvents. This oil, known as "sulphur olive oil" or "olive oil foots", is chiefly used for making soap.

Olive oil has been prized as an edible oil since the earliest times. It is conspicuously a salad oil. Refining processes, however, have made many other vegetable oils available for culinary purposes; thus cottonseed, corn and peanut oils have met with much favor and are of great commercial importance. Since imported olive oil is more expensive than domestic vegetable oils, unscrupulous packers and dealers have been tempted to substitute the cheaper oils for olive oil, and to sell the sophisticated product for the genuine article. Such adulteration is one of the oldest of frauds in food merchandizing. In spite of penalties imposed when such violations of law are detected, the practice is profitable enough to make its continuance attractive to the dishonest.

One of the most difficult problems in the control of adulterated olive oil is that presented by merchandizing through "bootleg" channels. Deliveries are made without invoices or other papers generally incidental to sales, and the packages bear no identification as to packer or jobber. When questioned, the retailer does not know, or "cannot remember" from whom he purchased. In case his stock is found to be adulterated, his defense is that he bought the oil in good faith and sold it in the original containers as received by him. In some instances, no doubt, the dealer is innocent,

but the circumstances of purchase, including the attractive price, should have made him suspicious. In the absence of a guaranty in writing to the effect that the oil is not adulterated or misbranded, he should be held accountable.

An objectionable feature in the marketing of edible vegetable oils, other than olive oil, is the practice of packing them in containers which simulate the general style, dress and design of those in which genuine olive oil is packed. Descriptive names and legends such as "olio", "olio finissimo", "Lucca" and other Italian place names, are commonly used in labelling products consisting largely, or entirely, of domestic oils. Cottonseed oil and other edible oils have an established place in household use, and may well be merchandized on their own merits as wholesome and acceptable foods and their identities as such conspicuously featured. To market them under devices which create the impression that they are olive oil, or oils of foreign production, is in itself an admission of inferiority. Apart from any consideration of consumer deception, such practice is distinctly opposed to the best interests of the producers and packers of domestic oils.

It would seem to be a clear matter of good business procedure to market domestic oils under their own names and scrupulously to avoid implications that they are anything else. Instead of this, however, it is common to find cottonseed oil, for example, sold in containers bearing pictures of olive trees and foreign countryside scenes, foreign place names and descriptive terms customarily used in describing olive oil. If the identity of the oil is disclosed at all, it is generally done in an obscure and inconspicuous manner. Likewise, when mixtures of olive oil and domestic vegetable oils are sold, it is the olive oil in the mixture that is emphasized. The other constituent oils are likely to be declared in indefinite ways by such terms as "salad oil" or "vegetable oil".

In recent months, due to advances in the price of cottonseed, corn and other domestic oils, imported sunflower oil has come into extensive use as a substitute for these products.

During the year special attention has been given by control officials to the labelling of edible oils. A joint committee made up of representatives from federal food control officials and those from the states of New Jersey, New York and Connecticut made a study of the problem. The findings of the committee were made available to control officials and to the packers of oil. They pointed out specific practices in labelling that were regarded as deceptive or misleading to the purchaser. The committee made the following recommendations or suggestions to serve as a guide in determining misbranding of edible oils.

1. That the words "Oil", or "Olio" should be used only in conjunction with the distinctive name of the kind, or kinds, of oil present.

2. That the terms "Salad Oil", "Cooking Oil", "Vegetable Oil", etc., should not be used in naming the kinds of oils contained in the package, but that the particular kinds of oils should be declared with their common names.

3. That in the case of mixtures of oils, a complete, plain and conspicuous statement of composition immediately follow the brand designation.

4. That the words "Italy", "Italia", "Lucca", or other foreign provincial names and names of prominent Italian persons or their pictures, be not used on labels of mixed oils, one or more of which are of domestic origin.

5. That the pictures of olive trees, or other trees or shrubbery tending to create the impression that they are olive trees, Italian country scenes with pictures of Italian peasants, coats of arms, medals, coins, etc. have no place in the labels on these products and should be prohibited.

6. That the terms "Virgin", "Vergine", "Pure", "Purio", "First Pressed", and the like, should be eliminated from these labels.

7. That the use of superlative terms as "Fino", "Vera", "Superiore", "Superfine", "Prima", etc. is not descriptive of a blend of oils and has no place on such labels.

8. That any design or device which obscures any of the printed portions of a label should not be permitted.

9. That no label or design be permitted on these blended or straight vegetable oils which simulates well known brands, or markings, or dress of imported olive oil cans.

10. That when a foreign language is used on any label it should be confined to a strict translation of the English on the same label.

11. That when artificial color or flavor or both are used to simulate olive oil, the product should be labelled as an imitation. The words "olive oil" should be in no larger type than the word "imitation" and should immediately follow that word. A statement of composition should be used in conjunction with the designation "imitation olive oil" and should be fully informing, such as "cottonseed oil, 85 percent; olive oil, 15 percent; artificial color and flavor."

12. That the quantity of contents be stated in a plain and conspicuous manner.

The Dairy and Food Commissioner made a survey of the market in this State and submitted 100 samples for examination. Judged on the basis of the recommendations above cited, very few samples were above criticism as to labelling, as the following summary will show.

Official samples		100
Labelled as olive oil:		
not found adulterated	4	
adulterated and misbranded	12	16
Labelled as cottonseed salad oil, but found to be adulterated		1
Labelled as salad oil or vegetable oil but without further identification of the oil		36
Labelled to show the presence of olive oil but not the identities of other oils present		30
Labelled as cottonseed oil		8
Labelled as vegetable seed oil		1
Labelled as cottonseed oil and olive oil		2
Miscellaneous labelling		6

Apart from those samples that were actually adulterated as well as misbranded, practically all of the others were open to criticism on one or more of the points given in the committee report cited above, but in 17 instances the objections were regarded as of minor character. Without other label features likely to mislead or deceive, no objection has hitherto

been taken in this State to products labelled as "salad oil" or "vegetable oil" without specific identification of the oil. This is not to minimize, however, the desirability and importance of a plain declaration of the identity of oils by their common names, as emphasized in the committee's report. Such practice is clearly in the interest of consumers who wish to choose their salad and cooking oils and those who, for peculiar dietetic reasons, may be forced to do so.

Corrective action was taken by the Dairy and Food Commissioner by means of hearings and prosecutions, and distinct improvement has been brought about by the concerted action of the several states and government agencies. Efforts further to correct labelling practice are being continued.

The most flagrant case of adulteration and misbranding that has come to our attention was that of a product labelled as pure olive oil bearing the name of Philip Berio and C, a well known brand of imported olive oil. The product was largely, or entirely, cottonseed oil artificially colored and flavored. The spurious product was sold in containers simulating so closely those holding the genuine article that they could not be distinguished except by the closest examination.

Four samples of olive oil were examined for consumers.

Analyses will be found in Table 3.

TABLE 3. ADULTERATED AND MISBRANDED EDIBLE OILS

No.	Label	Dealer	Packer or jobber	Remarks
57247	Italian Product Sublime Olive Oil	Angelo Macuda, Bridgeport	Acomo Fo, Lucca, Italy	Partly Cottonseed oil
57222	Italian Product Sublime Olive Oil	Italian-American Grocery, Inc., Hartford	Arte Products Co., Inc., N. Y.	
59710	La Vittoria Degli Alleati brand Salad Oil, Cottonseed Oil	International Importing Co., Hartford	International Importing Co., Providence, R. I.	Partly Cottonseed oil
60416	Sole brand Lucca Olive Oil	Domenico Bova, East Haven		Contained peanut oil
58788	Italian Product Sublime Olive Oil	Anttene DeCapio, New Haven		Largely cottonseed oil
57965	Italia brand Importato Olio D'Oliva Liguria	Antonet DiCapra, New Haven		Contained cottonseed oil and coal-tar color
59746	Italia brand Imported Olive Oil Liguria	French-Italian Importing Co., New Haven		Contained cottonseed oil and coal-tar color
60730	Philip Berio & C., Lucca, Tuscany, Pure Olive Oil	Alphonzo Afragola, New Haven	Unknown (not Philip Berio & Cie)	Contained cottonseed oil and coal-tar color Largely cottonseed oil, artificial color and flavor
60733	Superfine Olive Oil, Italia brand, Lucca, Italy	Verdi and DePierro (Itinerant vendors) New Haven	Verdi & DePierro, Brooklyn, N. Y.	Peanut oil and unidentified oil
60747	Superfine Olive Oil, Italia brand, Lucca, Italy	Middletown	Verdi & DePierro, Brooklyn, N. Y.	Peanut oil and unidentified oil
60403	Italian Produce Sublime Olive Oil, Lucca	E. Maccario Grocery Co., North Haven		Contained cottonseed oil and coal-tar color
60410	Italian Product Sublime Olive Oil, Berino brand, Lucca, Italia	L. Zezima, Stamford		Largely cottonseed oil and short volume
60093	Italian Produce Sublime Olive Oil, Lucca	John Francesconi, Inc., Wallingford		Largely cottonseed oil

OLIVE OIL NOT FOUND ADULTERATED OR MISBRANDED

No.	Label	Dealer	Packer or jobber	Remarks
60095	Culdrone brand Pure Olive Oil	C. Demmicel, Jewett City	Frank Ferry, Norwich	Pass
60414	Tivali brand Olive Oil	Torino Importing Co., New Britain		Pass
57962	Virgini-Milano brand Pure Olive Oil	Milano Importing Co., New Haven	Milano Importing Co., New Haven	Pass
59725	Italian Beauty brand Olive Oil	Mix E. Swirsky, Southington		Pass

ICE CREAM, ETC.

Ice cream of legal standard must contain not less than 10 per cent of milk fat, except in the case of fruit and nut ice creams for which the minimum fat content is 8 per cent. To guard against undue increase in volume, known as "swell" or "overrun", in the process of freezing, the statute provides that the content of food solids shall not be less than 1.6 pounds per gallon.

Samples taken from bulk cannot be judged as to solids per gallon because there is no way of conveniently determining the exact volume of the samples. Samples submitted in unit packages of declared volume are judged according to the declared volume and solids per gallon estimated on that basis.

Nineteen samples were examined in 1934 and all met or exceeded the minimum of 10 per cent of milk fat. Ten of them were in packages of declared volume and these contained from 1.7 to 2.4 pounds of solids per gallon and thus met the statute requirement.

The article known as "frozen custard" is of the same general character as ice cream but usually of lower fat content. Regulations require that such products be labelled to show the percentage of fat present when not meeting the fat standard for ice cream. Correctly speaking, a "custard" is an egg product and "frozen custard" should be classed as French ice cream which is made with eggs. Under the laws and regulations in many states, frozen custard is required to meet the specifications laid down for French ice cream, but efforts so to classify that article in this State have been opposed by those interested in the manufacture and sale of the product.

However, samples examined this year generally contain 10 per cent or more of fat and in one instance egg was claimed to be an ingredient. Of 17 samples, 12 contained substantially 10 per cent or more of fat; 3 contained less than 10 per cent but met the fat content declared in each case. Two were less than 10 per cent and were not labelled to show their sub-standard character.

Numerous frozen novelties have appeared on the market in recent years. They are somewhat on the order of ices and also resemble "frozen custard" in some respects. They contain milk, or a milk product, and have about the order of fat content, 3 to 5 per cent, that was commonly found in "frozen custard" of former years. Most of the 11 samples examined have been sold as "fudgicles", but some were sold under other fanciful names.

Three unofficial samples were examined.

Analyses will be found in Table 4.

TABLE 4. ANALYSES OF ICE CREAM, ETC.

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids per gal.
	Ice Cream			%	lbs.
60150	Vanilla, bulk	Freda Farms, Hartford	Own make	17.8	....
60151	Chocolate, bulk	Freda Farms, Hartford	Own make	18.0	....
58433	Vanilla and chocolate, bulk	Loft's, Inc., Meriden	Own make	19.0	....
58442	Vanilla and chocolate, brick	United Fruit & Vegetable Co., Meriden	Cooper Ice Cream Co., Providence, R. I.	13.6	....
58660	Harlequin, brick	Central Drug Co., Middletown	Linbrook Ice Cream Co.	11.8	1.9
58659	Cherry Bisque, brick	Cronin Drug Co., Middletown	....	17.8	2.4
58663	Vanilla, brick	Millardo Drug Co., Middletown	H. P. Hood & Sons	13.6	1.8
58664	Ice Berg, bulk	Millardo Drug Co., Middletown	H. P. Hood & Sons	13.4	....
58656	Strawberry, vanilla and chocolate, brick	Misenti's Drug Co., Middletown	Millbrook Ice Cream Co.	9.4	1.7
58657	Chocolate, brick	Misenti's Drug Co., Middletown	Millbrook Ice Cream Co.	14.4	1.9
58665	Vanilla, brick	Olympia Candy Shop, Middletown	Own make	19.4	1.7
58658	Strawberry, bulk	J. W. Stueck & Son, Middletown	Own make	17.4	....
58661	Neapolitan, brick	Whelan's Drug Co., Middletown	General Ice Cream Corp.	13.4	2.1
58667	Strawberry, bulk	DiLupe Bros., New Haven	Own make	12.8	....
58670	Neapolitan, brick	Eld Pharmacy, New Haven	Sagal-Lou Co.	11.4	1.8
58671	Neapolitan, brick	Eld Pharmacy, New Haven	Sagal-Lou Co.	10.2	1.9
58666	Neapolitan, brick	Marioni Ice Cream Co., New Haven	Own make	12.0	1.7
58443	Vanilla, brick	Caramel Crisp Shop, Wallingford	Own make	14.8	....
58438	Vanilla, bulk	Sugar Bowl, Wallingford	Own make	15.0	....
	Frozen Custard				
58517	Strawberry	H. O. Charters, Bridgeport	Clover Farms, Inc.	10.8	....
58519	Walnut	H. O. Charters, Bridgeport	Clover Farms, Inc.	11.2	....
58520	Strawberry	S. Greco, Bridgeport	Bridgeport Lemon Ice Co.	9.6	....
58521	Strawberry	Bela Maisezi, Bridgeport	Own make	11.0	....
58518	Vanilla	Chas. Micalizzi, Bridgeport	Own make	10.4	....

TABLE 4. ANALYSES OF ICE CREAM, ETC.—*Concluded*

No.	Flavor and brand	Dealer	Manufacturer	Fat	Solids per gal.
				%	lbs.
58516	Vanilla	D. Paglinco, Bridgeport	Bridgeport Lemon Ice Co.	10.0	....
58525	Vanilla	Tyson's, Cos Cob	Chas. Micalizzi, Bridgeport	10.8	....
58662	Vanilla	G. Vecchitto, Middletown	Own make	2.2	....
58672	Vanilla	G. Vecchitto, Middletown	Own make	5.8	....
58669	Vanilla	James Perilli, New Haven	Own make	16.0	....
58668	Vanilla	C. Vitale, New Haven	Own make	11.6	....
58524	Strawberry	G. C. Dewey, Stamford	Own make	10.0	....
58523	Vanilla	Geo. Murphy Co., Stamford	Own make	7.0	....
58522	Vanilla	Orange Inn, Stamford	Clover Farms, Inc.	11.8	....
58653		Wm. P. Smith, Torrington	Own make	7.0	....
58437		Affie Bros., Wallingford	Own make	10.8	....
58439		Sugar Bowl, Wallingford	Own make	5.0	....
	Fudgicles				
58441		Highland Dairy, Inc., Hartford	Own make	3.6	....
58444		Billie Burns Candy Shoppe, Meriden	Crown Ice Cream Co., New Britain	3.6	....
58425		Brock-Hall Dairy Co., New Haven	Own make	3.8	....
58427		Marioni Ice Cream Co., New Haven	Own make	2.8	....
58426		Sagal-Lou Co., New Haven	Own make	3.6	....
58429		Whelan's Ice Cream Co., Waterbury	Own make	4.0	....
58431		R. F. Worden's & Sons, Waterbury	Own make	3.6	....
58424		Clark Dairy, Inc., West Haven	Own make	4.2	....
	Cherio				
58440		Highland Dairy, Inc., Hartford	Own make	11.6	....
	Pops				
58430		Whelan's Ice Cream Co., Waterbury	Own make	6.2	....
58432		R. F. Worden's & Sons, Waterbury	Own make	5.2	....

MACARONI, ETC.

Five samples of macaroni and spaghetti were examined for artificial color but no evidence of it was found. The samples were from the Big Lyon Store, 59418, 59419; Joseph Granato, 59420, 59421; and the Connecticut Macaroni Co., 59422—all of Hartford.

MATÉ

Maté, or Paraguay tea, is the beverage prepared from the dried and cured leaves of various species of *Ilex,* the most acceptable quality being derived from *Ilex paraguayensis.* The shrub is an evergreen and abounds in Brazil, Argentina and other South American countries where the beverage is highly prized and consumed in enormous quantities. The leaves are dried but not fired, and are marketed in a coarse-ground condition. The beverage is an infusion prepared somewhat after the manner of tea. It is sucked through a tube of silver or bamboo called a "maté", from which the beverage, as well as the prepared leaves, derives the name. The shrub is not adapted to the climate of North America although a related species, *Ilex cassine,* is grown in some of our southern states. There is some consumption of maté in this country and those who have acquired a taste for it find it a palatable and stimulating beverage.

Analyses of two commercial brands of maté and, for comparison, two samples of cassina are given in Table 5.

Woodward and Cowland (*Analyst* **60,** 135, 1935) have investigated the so-called tannin in maté. They conclude that, although the usual methods give values for this constituent that are of about the same magnitude as those for tea, there is no true tannin in maté. Evidence was obtained indicating the presence of caffetannin or a closely related pseudo-tannin.

It will be noted that caffeine, to which the stimulating effects of the beverage are largely due, is of about the same magnitude as in coffee. Caffeine is higher in commercial teas and generally ranges from 1.9 to 3.3 per cent. Tea will yield from 35 to 40 per cent of hot water extract. The two samples of maté examined yielded somewhat more, 43.5 to 45.7 per cent.

MEAT PRODUCTS

Sausage

Cereal or other starchy material is often added to sausage to insure a turgid or "poppy" character when cooked. There is no objection to the practice provided the presence of the starchy material is declared and the amount does not exceed 3.5 per cent.

One sample of sausage meat, five of frankfort sausage and one of bologna were examined. In three cases cereal was not properly declared, and in one the amount (5.00 per cent) was excessive.

Analyses are found in Table 6.

TABLE 5. ANALYSES OF MATÉ AND CASSINA

Preparation	Moisture	Petroleum ether extract	Hot water extract	Tannin	Nitrogen	Crude fibre	Caffeine	Ash					
								Total	Water-soluble	Water-insoluble	Acid-soluble	Acid-insoluble	Soluble P_2O_5	Insoluble P_2O_5
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Yerba Maté	5.20	4.00[1]	45.70	7.59	2.37	....	1.32	5.98	2.90	3.08	5.79	0.19	....	....
Joyz Maté	7.80	5.98[2]	43.45	7.90	2.31	....	1.30	7.70	2.81	4.89	7.39	0.31	....	....
Cassina, black	3.15	1.68	31.00	....	2.25	14.13	0.69	6.00	1.71	4.29	4.91	1.09	0.03	0.58
Cassina, green	3.68	1.98	40.00	....	2.30	12.29	0.38	6.00	1.72	4.28	4.60	1.40	0.14	0.63

[1] Volatile 0.57%
[2] Volatile 0.32%

Hamburg Steak

Sodium sulphite is sometimes added to chopped steak (Hamburg). This treatment does not prevent the multiplication of bacteria, but it does mask the odor that results from decomposition. Thus meat may be "tainted" without any evidence to the sense of smell. Sulphites also impart a false appearance of freshness by enhancing the natural red color of meat. Sulphites are not recognized in federal or state regulations as permissible for the preservation of meats.

Of five samples examined, sulphites were found in three.

Analyses are found in Table 6.

TABLE 6. EXAMINATION OF MEAT PRODUCTS

No.	Dealer	Remarks
	Frankfurts, etc.	
60099	Growers' Outlet, Hartford	Pass
57961	Economy Market, Meriden	Excess cereal
57606	Public Market, Middletown	Pass
57960	Peter Fchezchuk, New Britain	Cereal not declared
57959	Universal Stores, New Britain	Cereal not declared
57607	Congress Public Market, New Haven	Pass
57952	Frank Antsyak, Waterbury	Cereal not declared
	Hamburg	
60098	Singer's Market, Danbury	Sulphites present
57608	Central Market, Danbury	Sulphites present
57609	Central Market, Danbury	Sulphites present
57610	New England Market, Danbury	Pass
57611	United Market, Danbury	Pass

MILK AND MILK PRODUCTS

Market Milk

Sixty-nine samples of milk were examined. Three were found to be watered and one was skimmed.

The watered samples were sold by Mrs. Louise Waterman, Nos. 59055 and 59056, and Louis Waterson, 58818, both of Danbury. The skimmed sample, 60158, was dispensed by the glass at the Chilis Restaurant, New Haven. Dispensing by the glass is contrary to regulations. A sample in a 10-ounce bottle from the same restaurant was of standard quality.

In addition to these official samples, 490 samples were tested for producers and others. Among these were 20 samples of soft curd milk examined for Professor Anderson of Storrs who is studying some aspects of mastitis. Calcium and phosphorus were determined. One hundred grams of milk were treated with one gram of sodium hydroxide and ashed. The ash was dissolved in dilute hydrochloric acid, calcium and phosphorus determined by official methods in aliquots representing 10 grams of milk. A summary of results is recorded for reference. Excluding one sample, apparently abnormal, the figures for calcium (CaO), ranged from 0.142 to 0.233 per cent, and those for phosphorus (P_2O_5), ranged from 0.157

to 0.291 per cent. The abnormal sample (curdled and brown in color), contained 0.041 per cent of CaO and 0.193 per cent of P_2O_5.

Evaporated Milk

Three samples of evaporated milk tested for a purchaser were found to be of standard quality.

Cream

Sixteen samples of cream were examined for the Dairy and Food Commissioner and fourteen samples were tested for producers and others.

Thickening with sucrate of lime was suspected in a number of samples. Preliminary trials of methods were made with cream of known purity. It contained 48.8 per cent of fat, 0.101 per cent of acidity calculated as lactic acid, and 0.082 per cent of calcium, as calcium oxide. A solution of calcium sucrate was prepared according to the directions given in Leach, p. 187. To 200 grams of cream was added 0.83 cc of calcium sucrate solution (to neutralize two-thirds of the acidity of the cream). The CaO content of the treated cream was 0.106 per cent. The maximum for cream of about the fat content of this untreated sample may be considered to be 0.099 per cent (*J. Ind. Eng. Chem.* **2**, 328, 1910).

Tests on both samples by the molybdate procedure (Leach), gave blue colors in both cases but noticeably darker in the case of the calcium sucrate cream. The resorcin test by the technique of Lythgoe (Mass. State Board of Health report on Food and Drugs, 1908, p. 39), gave no color in either case. The Elsdon procedure (*Analyst,* **43**, 292, 1918) on the cream direct and on the uranium acetate serum resulted in dark brown colors in all cases when evaporation over steam was employed. The following technique, however, was found to distinguish between the treated and the untreated samples:

Modified Baier and Neumann test. To 25 cc of cream add 25 cc of water and 10 cc of 5 per cent uranyl acetate and filter. Take 10 cc of the filtrate and mix with 2 cc of saturated ammonium molybdate solution and 8 cc of 1:7 HCl. Heat for 5 minutes at 80° and filter. The filtrate was blue in both the treated and untreated samples, but in the case of the pure cream, the color was much less intense than the shade of Prussian blue used for comparison and produced by a mixture of 1 cc of 0.1 per cent ferric chloride, 20 cc of water, 5 drops of 10 per cent sulphuric acid and 2 drops of normal potassium ferrocyanide.

Resorcin test. To 3 cc of the uranyl acetate filtrate add 0.1 gram of resorcin and 0.3 cc of 3 N.HCl. Place 0.5 cc of this mixture in a depression of a porcelain spot-plate and allow to stand at room temperature in a desiccator overnight, or until dry. A pronounced pink color was produced in the calcium sucrate cream but the pure cream developed no pink color.

Two samples of commercial cream gave positive tests by both of the above procedures. The results were negative or inconclusive in the other samples. The fat content of the samples giving positive tests was 34.5 per cent in each and the content of calcium oxide was 0.123 and 0.124 per cent.

PICKLES

Pickles are cucumbers or other vegetables prepared with any kind of vinegar, with or without spices.

Salt pickles are prepared with a solution of common salt and sweet pickles are prepared with sugar and/or dextrose.

Saccharin is not a legal sweetening agent for pickles. If benzoic acid or a benzoate is used, its presence must be declared on the label. In common with all packaged foods, a declaration of net weight of contents must be made.

In recent years saccharin has been of rare occurrence in food products as shown by our surveys, but during this year it appeared in a number of brands of sweet pickles. Of 114 samples collected, 3 contained saccharin, 19 contained benzoic acid or a benzoate the presence of which was not declared, 7 contained both saccharin and undeclared benzoic acid, and 2 contained saccharin with declared benzoic acid. Three samples failed to bear a statement of net weight.

Under the regulations in this State saccharin may not be used in food products even with label declaration. The exception is in case of foods designed for special diet purposes as, for example, foods intended for persons who cannot tolerate sugar.

The samples examined are listed in Table 7.

TABLE 7. EXAMINATION OF SWEET PICKLES

No.	Dealer	Packer, as labelled or according to statement of dealer	Saccharin	Benzoic acid
58197	Boston Candy Co., Bridgeport	Shore Line Products Co., Stamford	none	none
58194	Consumers' Food Stores, Bridgeport	General Pickling & Food Products Corp., New York City	none	present but not declared
58196[1]	United Dairy and Delicatessen, Bridgeport	R & R Empire Pickle Works, Inc., New York City	none	none
58195[1]	Consumers' Food Stores, Bridgeport	General Pickling & Food Products Corp., New York City	none	present but not declared
58193	Consumers' Food Stores, Bridgeport	Kergan's Arcadia Farms, Inc., Amelia, Ohio	none	none
57568	Washington Market, Bridgeport	Silver Lane Pickle Co., Silver Lane	present	present but not declared
57563	Betterman Bros., Central Village	Silver Lane Pickle Co., Silver Lane	none	present but not declared
58446	Serv-All Market, Danbury	F. Sala & Co., Lyndhurst, N. J.	none	present but not declared
58449	Daniel Reeves, Inc., Greenwich	Del Monte brand	none	none
58500	Greenwich Delicatessen Lunch, Greenwich	Cruikshank Bros., Pittsburgh, Pa.	none	none
58501	Greenwich Delicatessen Lunch, Greenwich	Picko Pickle Products Co., New York City	none	none
58448	Gristede Bros., Inc., Greenwich	Budlong Pickle Co., Chicago, Ill.	none	none
58447	Gristede Bros., Inc., Greenwich	Lutz & Schramm Co., Pittsburgh, Pa.	none	none
58184	Benjamin's Delicatessen, Hartford	Seeman Bros., Inc., New York City	none	present but not declared
58177	D. F. Burns, Hartford	Austin-Nichols Co., Inc., New York City	none	none
58186	F. P. Case, Hartford	Bond Pickle Co., Oconto, Wis.	none	none
58187	F. P. Case, Hartford	Fremont Kraut Co., Pittsburgh, Pa.	none	none
58170	Everybody's Market, Inc., Hartford		present	present but not declared
58178	First National Stores, Hartford	Squire Dingle Co., Chicago, Ill.	none	none
58199	Everybody's Market, Hartford	Silver Lane Pickle Co., Silver Lane	present	present but not declared
58400	Everybody's Market, Hartford	Silver Lane Pickle Co., Silver Lane	present	none
58401	Grand Department Stores, Hartford	N. J. Empire Pickle Works, Newark, N. J.	none	none
58181	Great Western Market, Hartford	A. Krasne, New York City	none	none
58176	Greenwood Market, Hartford	Gaffney, Kearney, N. J.	none	none
58402	Grower's Outlet, Inc., Hartford	Grower's Outlet, Inc.	none	none
58404	Uneeda Cash Market, Hartford	The Orringer Pickle Co., New Bern, N. C.	none	present but not declared
58182	Union Butter Co., Hartford	Austin-Nichols & Co., Inc., New York City	none	none
58403	Union Butter Co., Hartford	Cambridge Packing Co., Cambridge, Mass.	present	present but not declared

[1]Net contents not declared.

TABLE 7. EXAMINATION OF SWEET PICKLES—*Continued*

No.	Dealer	Packer, as labelled or according to statement of dealer	Saccharin	Benzoic acid
58423	Hotkowski's Grocery, Hartford	Lesco Food Co., Pittsburgh, Pa.	none	none
58185	Preston Market, Hartford	Crosse & Blackwell	none	none
57581	Sigourney Grocery Co., Hartford	Mrs. E. G. Kidd, Inc., Richmond, Va.	none	none
57582	Sigourney Grocery Co., Hartford	Mrs. E. G. Kidd, Inc., Richmond, Va.	none	none
57583	Sigourney Grocery Co., Hartford	A. Krasne, New York City	none	none
58180	A. Squires & Son, Hartford	S. S. Pierce Co., Boston, Mass.	none	none
58174	Uneeda Market, Hartford	Orringer Pickle Co., New Bern, N. C.	none	none
58175	Uneeda Market, Hartford	R. G. Williams & Co., Inc., New York City	none	present but not declared
58183	Union Butter Co., Hartford	Cambridge Packing Co., Cambridge, Mass.	none	none
58171	Vogel Bros., Hartford	Vogel Bros., Hartford	present	present but not declared
58172	Vogel Bros., Hartford	Vogel Bros., Hartford	none	present but not declared
58173	Vogel Bros., Hartford	Vogel Bros., Hartford	none	none
58179	M. Winer Co., Hartford	Green Bay Food Co., Green Bay, Wis.	none	none
58410	E. W. Birk, Litchfield	The Sohomey Co., Cincinnati, Ohio	none	none
58411	E. W. Birk, Litchfield	Francis H. Leggett & Co., New York City	none	none
58412	E. W. Birk, Litchfield	A. L. Rogers Co., West Somerville, Mass.	none	none
58434	New Wonder Market, Meriden	R. G. Williams & Co., Inc., New York City	none	none
58435	United Fruit & Vegetable Market, Meriden	Orringer Pickle Co., New Bern, N. C.	none	none
58436	United Fruit & Vegetable Market, Meriden	Bay View Packing Co., Boston, Mass.	present	present
58428	J. R. Lynch, Middletown	Crampton Canneries, Inc., Celina, Ohio	none	present, declared
58168	Cooked Food Shop, New Britain	Roberts, Steele & Dolan, Inc., Hartford	present	none
58413	Cooked Food Shop, New Britain	Roberts, Steele & Dolan, Inc., Hartford	present	present but not declared
57594	King Cole Stores, Inc., New Britain		trace?	none
58155	King Cole Stores, Inc., New Britain	Libby	none	.....
58157	King Cole Stores, Inc., New Britain	Seeman Bros., Inc., New York City	none	none
58158	King Cole Stores, Inc., New Britain	Seeman Bros., Inc., New York City	none	none
58159	King Cole Stores, Inc., New Britain	Seeman Bros., Inc., New York City	none	present but not declared
58160[1]	Linwood Market, New Britain	Vogel Bros., Hartford	none	none
58161	Linwood Market, New Britain	Vogel Bros., Hartford	none	none
58162	Linwood Market, New Britain	Clare Food & Relish Co., Inc., Philadelphia, Pa.	none	present but not declared
57596	Mohican Market, New Britain	Fremont Food Products Co., Pittsburgh, Pa.	none	none

[1]Net contents not declared.

TABLE 7. EXAMINATION OF SWEET PICKLES—*Continued*

No.	Dealer	Packer, as labelled or according to statement of dealer	Saccharin	Benzoic acid
57597	Mohican Market, New Britain	Miner, Read & Tullock, New Britain	none	none
58192	King Cole Stores, Inc., New Britain	Seeman Bros. Co., Inc., New York City	none	present but not declared
58151	City Service Market, New Haven	Connecticut Food Packing Co., New Haven	none	present but not declared
57587	Congress Square Meat Market, New Haven	Connecticut Food Packing Co., New Haven	none	present but not declared
57588	Congress Square Meat Market, New Haven	Pepe-Maisanio Co., New Haven	none	none
58414	Home Made Salad & Delicatessen Store, New Haven	Reslet & Rosenbaum, Inc., New York City	none	none
58153	Moquet Bros., New Haven	Banster Prod. Co., Chicago, Ill.	none	none
58165	Palace Market, New Haven	M. Polaner & Son, Newark, N. J.	none	none
58166	Palace Market, New Haven	Hodes Bros., New Haven	none	none
58154	Porter's Market, New Haven	Francis H. Leggett & Co., New York City	none	none
58152	P & K Cut Rate Market, New Haven	General Pickling & Food Prod. Corp., New York City	none	present but not declared
57585	Pure Food Store, New Haven	Empire Pickle Works, New York City	none	none
58533	Fairy Lake Farms, Inc., New London	Emsco Pure Food Co., New York City	none	none
58445	Great A & P Tea Co., New Milford		none	none
58511	J. E. Surprenaut, No. Grosvenordale	United Wholesale Grocery Co., Worcester, Mass.	none	none
58512	J. E. Surprenaut, No. Grosvenordale	C. A. King Co., Worcester, Mass.	none	none
58513	J. E. Surprenaut, No. Grosvenordale	J. P. Howard, Inc., Haverhill, Mass.	present	none
58190	S. K. Ames Co., Norwich	Standard Brands, Inc., Cleveland, Ohio	none	none
58191	G. O. Hathaway, Norwich	Yantic Grain & Products Co., Norwich	none	none
58526	A & P Tea Co., Pawcatuck	Quaker Maid Co., Inc., New York City	none	none
58529	Gordon's Market, Pawcatuck	Brownell & Field Co., Providence, R. I.	none	none
58530	Gordon's Market, Pawcatuck	Crampton Canneries, Celina, Ohio	none	none
58527	Henderson's Market, Pawcatuck	Twitchell, Champlin Co., Portland, Maine	none	none
58528	Henderson's Market, Pawcatuck	Libby, McNeil & Libby, Chicago, Ill.	none	none
58506	W. H. Mansfield, Putnam	Food Specialty Co., Worcester, Mass.	none	none
58507	W. H. Mansfield, Putnam	Capitol Wholesale Grocery Co., Providence, R. I.	none	none
58508	A. P. Pepin, Putnam	Worcester Packing Co., Worcester, Mass.	none	none
58509	A. P. Pepin, Putnam	Providence Pickling Co., Providence, R. I.	present	present, declared
58510	A. P. Pepin, Putnam	E. S. Smith Co., Worcester, Mass.	none	none

TABLE 7. EXAMINATION OF SWEET PICKLES—*Concluded*

No.	Dealer	Packer, as labelled or according to statement of dealer	Saccharin	Benzoic acid
58514	Allard's Store, Pomfret	Swift & Co., Chicago, Ill.	none	none
57576	Silver Lane Pickle Co., Silver Lane		present	present but not declared
57577	Silver Lane Pickle Co., Silver Lane		none	present but not declared
57578	Silver Lane Pickle Co., Silver Lane		none	none
57579	Silver Lane Pickle Co., Silver Lane	Silver Lane Pickle Co., Silver Lane	none	present but not declared
57580	Silver Lane Pickle Co., Silver Lane		none	present but not declared
58422	Hotkowski's Grocery, Stafford Springs	Kergan's Arcadia Farms, Inc., Amelia, Ohio	none	none
58504	Conn. Butter & Egg Co., Stamford	Chesapeake Conserving Co., Baltimore, Md.	none	none
58502	Jas. Van Dyke Co., Stamford	Alco Packing Co., New York City	none	none
58503	Jas. Van Dyke Co., Stamford	Alco Packing Co., New York City	none	none
58531	E. P. Faulk, Stonington	John E. Cain, Cambridge, Mass.	none	none
58532	E. P. Faulk, Stonington	Independent Grocery Alliance, Chicago, Ill.	none	none
58419	C. Alaimo, Thompsonville	Downing, Taylor Co., Springfield, Mass.	none	none
58420	C. Alaimo, Thompsonville	National Pickle Works, Boston, Mass.	none	present, declared
58421	C. Cimono, Thompsonville	Downing, Taylor Co., Springfield, Mass.	none	none
58405	Fulton Markets, Inc., Torrington	L. C. Forman & Sons, Inc., Pittsford, N. Y.	none	none
58406	Fulton Markets, Inc., Torrington	L. C. Forman & Sons, Inc., Pittsford, N. Y.	none	none
57599	O. K. Market, Torrington	Colonial Packing Co., Inc., Brooklyn, N. Y.	none	none
58150	Helen Fox Kruser, Torrington	H. J. Heinz Co., Pittsburgh, Pa.	none	none
57589	Grand Union Grocery Co., Waterbury	Welmont Packing Co., New York City	none	none
57590	Grand Union Grocery Co., Waterbury	Helwig & Leitch Corp., Baltimore, Md.	none	none
57591	Grand Union Grocery Co., Waterbury	H. J. Heinz Co., Pittsburgh, Pa.	none	none
57592	Grand Union Grocery Co., Waterbury	Emery Food Co., Chicago, Ill.	none	none
57593	Grand Union Grocery Co., Waterbury	Cleveland Food Co., Cleveland, Ohio	none	none
58188	Leboy's Market, Willimantic	Chapin Grocery Specialties Co., Inc., Springfield, Mass.	none	none
58189	Leboy's Market, Willimantic	Reval Foods, Inc., Cambridge, Mass.	none	none

VINEGAR

One official sample of vinegar was examined and passed as cider vinegar. Six samples were examined for individuals.

II

DRUGS

ARSENIOUS ACID

Five official samples of solution of arsenious acid were examined. One was decidedly below standard. Analyses are given in Table 8.

TABLE 8. ANALYSES OF SOLUTION OF ARSENIOUS ACID

No.	Dealer	As_2O_3 gm/100 cc.
	U. S. P. limits	0.975–1.025
59017	Liggett's Drug Store, Hartford	0.909
58970	Wilmore Pharmacy, Hartford	0.608
58975	Woodward Drug Store, Middletown	1.014
59229	Lee and Osgood Co., Norwich	1.041
59045	Kattenhoff's Drug Store, West Hartford	0.999

GLYCERITE OF BISMUTH

One sample of this preparation was examined. The National Formulary requires that it yield not less than 12.5 grams, nor more than 13.5 grams, of bismuth oxide per 100 cc. The sample examined was from Northrop's Drug Store, Danbury, and said to be a product of Squibb. It yielded 13.79 grams of Bi_2O_3 per 100 cc and was passed.

SOLUTION OF CHLORINATED SODA

This solution should contain not less than 2.5 per cent of available chlorine. Five samples were examined of which only one was of standard strength. This was from a department store. Analyses are given in Table 9.

TABLE 9. ANALYSES OF SOLUTION OF CHLORINATED SODA

No.	Dealer	% Avail. chlorine
	U. S. P. standard, not less than	2.5
59011	G. Fox and Co., Inc., Hartford	2.54
59049	Garvin Drug Co., Hartford	1.22
59200	D. G. Stoughton Co., Hartford	1.50
59230	Liggett's Drug Store, Norwich	1.50
59027	Wallingford Drug Co., Wallingford	1.42

COMPOUND SOLUTION OF IODINE

The U. S. P. standard for this article is not less than 4.8 grams, nor more than 5.2 grams, of iodine, and not less than 9.8 grams, nor more than 10.2 grams, of potassium iodide in each 100 cc of solution.

Twenty-nine official samples were examined of which thirteen were passed. Sixteen failed to meet the above requirements in one or both particulars by substantial amounts.

Analyses are given in Table 10.

TABLE 10. ANALYSES OF COMPOUND SOLUTION OF IODINE

No.	Dealer	Iodine gms/100 cc.	Potassium iodide gms/100 cc.
	U. S. P. limits	4.8–5.2	9.8–10.2
59404	Bristol Drug Co., Ansonia	5.1	11.3
59411	Cascellar Pharmacy, Bridgeport	5.2	10.2
59210	Blackhall's Drug Store, Bristol	4.4	9.5
59206	Boulevard Pharmacy, Bristol	4.5	10.3
59406	McNamara's Pharmacy, Collinsville	5.4	11.3
59241	Wixted's Pharmacy, Danbury	4.2	15.4
59240	Ziegler's Drug Store, Danbury	6.0	12.7
59213	Holcomb Drug Co., East Haven	3.7	8.7
58998	M. J. Franklin, Glastonbury	3.1	9.2
58961	State Drug Store, Inc., Groton	1.9	11.1
59201	D. G. Stoughton Co., Hartford	4.5	10.1
59047	J. M. Dougherty, Inc., Hartford	4.8	11.4
59046	Temkin Drug Co., Hartford	6.3	10.8
58992	Hazardville Pharmacy, Hazardville	3.8	9.3
59416	Brooks Drug Co., New Britain	4.2	10.5
59437	James Drug Store, New London	4.5	8.7
59216	Lee Pharmacy, Rockville	4.5	9.9
59215	Metcalf's Rexall Store, Rockville	4.6	10.1
59402	Geo. Smith & Son, Seymour	4.6	10.3
59029	Lincoln's Drug Store, Simsbury	4.6	10.2
58995	Weldon Drug Co., So. Manchester	6.1	11.0
59218	E. H. Wick's Pharmacy, Stafford Springs	4.5	9.9
58951	Hamilton's Pharmacy, Stratford	2.4	8.3
58988	Steel's Corner Drug Store, Thompsonville	4.8	10.8
59400	W. J. Dumphy, Waterbury	4.1	9.2
59223	Curran and Flynn, Willimantic	5.0	10.4
59220	Nathan Hale Drug Store, Willimantic	4.3	10.9
58986	R. J. Keefe Pharmacy, Windsor Locks	5.1	14.2
59033	Sceery and Ivery, Winsted	4.8	9.9

TINCTURE OF IODINE

Tincture of iodine should contain not less than 6.5 grams, nor more than 7.5 grams, of iodine and not less than 4.5, nor more than 5.5 grams, of potassium iodide in each 100 cc.

Twenty-two samples were examined and all were satisfactory in that they either fully met the standard or were sufficiently close to it to be passed. These samples were in all cases products of manufacturing chemists or pharmaceutical houses, whereas the samples of compound solution of iodine listed above were of the druggists' own compounding, with one exception.

Analyses are given in Table 11.

TABLE 11. ANALYSES OF TINCTURE OF IODINE

No.	Dealer and manufacturer	Iodine gms/100 cc.	Potassium iodide gms/100 cc.
	U. S. P. limits	6.5–7.5	4.5–5.5
59207	Central Drug Co., Bristol, (Standard)	6.9	4.7
59226	Van Cleve's Pharmacy, Colchester (Sisson)	7.2	4.8
59005	Purdy Drug Co., Derby (Sharp & Dohme)	6.9	4.8
58954	J. L. Maillard Drug Co., Devon (McKesson & Robbins)	7.3	5.1
58993	Prospect Pharmacy, East Hartford (Chamberlain)	6.3	5.2
59013	Beacon Drug Co., Hartford (Smith)	7.0	4.7
59014	Whitney Pharmacy, Hartford (Certified Pharmacal Co.)	6.6	4.4
59048	Hillside Pharmacy, Hartford (Hygienic Pharmacal Lab.)	6.8	4.6
58957	E & C Primrose, Milford (Champion)	6.8	5.0
59439	Taylor's Prescription Pharmacy, New London (Standard)	6.9	4.7
59228	Julius Cooper, Norwich (National)	6.6	4.8
59203	Thrall's Drug Store, Plainville (Brewer)	6.6	4.5
59429	Central Pharmacy, Saybrook (Premo)	6.5	4.8
59041	Eggleston's Drug Store, Sharon (Merck)	7.0	4.7
58952	Brodie Drug Co., Stratford (Wyeth)	6.7	4.7
59025	Marx Pharmacy, Wallingford (United)	6.9	4.9
59026	J. H. Moran, Wallingford (Mallinckrodt)	6.9	4.6
59225	J. J. Hickey Drug Co., Willimantic (Nyal)	6.7	4.6
59222	Wilson Drug Co., Willimantic (Squibb)	7.0	4.7
59221	Windham Pharmacy, Willimantic (Lilly)	7.1	4.9
58984	Windsor Drug Co., Windsor (A.F.A.)	6.7	4.7
59036	F. S. Bushnell, Winsted (Arbor)	6.4	4.7

FLUID EXTRACT OF IPECAC

This preparation should contain not less than 1.35 grams, and not more than 1.65 grams, of ether soluble alkaloids of ipecac in each 100 cc. Only three samples were examined, two of which were passed. The other was deficient.

Analyses are given in Table 12.

TABLE 12. ANALYSES OF FLUID EXTRACT OF IPECAC

No.	Dealer	Ipecac alkaloids gms/100 cc.
	U. S. P. limits	1.35–1.65
59245	Park Pharmacy, New Milford	1.59
59204	G. R. Byington, Plainville	1.37
58792	G. N. LeMaitre, Putnam	1.16

SOLUTION OF CITRATE OF MAGNESIA

The U. S. Pharmacopoeia requires that this solution contain not less than 1.5 grams of magnesium oxide per 100 cc; also not less than 9.8 grams of total citric acid, and not less than 3.3 grams of free citric acid, in each 100 cc.

Samples examined generally meet the major requirement as to magnesium oxide but very often fail to meet the standard for acidity. If the consumer desires less acid products than the Pharmacopoeia requires, there is no objection under the drug law to such an article provided the product is labelled to show wherein it differs from the official preparation.

Twenty-nine samples were examined. Only eight failed to meet the standard for magnesium oxide content by substantial amounts, but sixteen did not meet the acidity requirements or the magnesium requirements, or both, sufficiently well to be passed. The products were made by the dealers except where otherwise noted.

Analyses are given in Table 13.

TABLE 13. ANALYSES OF SOLUTION OF CITRATE OF MAGNESIA

No.	Dealer	Magnesium oxide gms/100 cc.	Citric acid gms/100 cc.	
			Total	Free
	U. S. P. standard, not less than	1.5	9.8	3.3
59006	Capitol Pharmacy, Ansonia	1.7	9.6	3.6
59007	Schoonmaker's Drug Store, Ansonia	1.4	7.6	2.5
59248	Spaulding Co., Branford	1.7	9.0	3.0
59042	Warner's Drug Shop, Cheshire (Leete)	1.3	8.4	3.5
59246	Kinner's Drug Store, Danbury	1.6	8.8	3.1
58797	Woodward's Drug Store, Danielson (National)	1.5	9.4	3.9
59002	Harding Drug Store, Derby	1.2	6.6	2.1
59016	A. Peterson, Hartford	1.3	7.9	3.0
58969	Franklin Pharmacy, Hartford	0.7	5.5	2.6
59232	Chas. R. Carey, Jewett City (Sterling)	1.7	9.4	3.7
59407	T. E. Jolly, Madison (Regal)	1.7	9.7	3.5
58974	Cassidy's Pharmacy, Middletown (U. S. Pharm. Co.)	1.7	9.2	3.3
58959	Milford Pharmacy, Milford	1.5	8.6	3.3
58958	John T. Howes, Milford	1.7	9.1	3.0
59234	Moosup Pharmacy, Moosup	1.4	9.2	4.4
58963	Mystic Pharmacy, Mystic	1.5	8.6	3.1
58962	Knox Drug Store, Mystic	1.3	7.4	2.6
58966	North Haven Pharmacy, North Haven	1.7	7.1	1.5
58795	W. B. Carroll, Putnam (Prov. Drug Co.)	1.8	8.9	2.9
58999	E. J. Barden, Shelton	1.7	9.7	3.9
59030	Hoffert's Pharmacy, Simsbury	1.7	9.5	3.9
58950	Blank Bros., Stratford (Klauson Magnesia Co.)	1.1	8.8	4.6
59238	Latimer's Drug Store, Thomaston (Apoth. Hall Co.)	1.7	9.7	3.6
59019	North End Drug Store, Torrington	1.7	9.5	3.5
59021	Claxton's Pharmacy, Torrington	1.4	8.0	3.1
59023	Park Pharmacy, Torrington	1.4	8.3	2.9
59028	Liberty Pharmacy, Wallingford	1.4	7.7	2.8
58985	Bridge Pharmacy, Windsor Locks	1.1	6.1	1.9
59034	City Pharmacy, Winsted	1.3	9.5	1.6

TINCTURE OF NUX VOMICA

The Pharmacopoeia requires that this tincture contain not less than 0.237 gram, nor more than 0.263 gram of total alkaloids of nux vomica in each 100 cc. Twelve samples were examined. Only one was within the U. S. P. limits but with one exception the others were deficient by less than 10 per cent, and were passed.

Analyses are given in Table 14.

TABLE 14. ANALYSES OF TINCTURE OF NUX VOMICA

No.	Dealer	Total alkaloids, gms/100 cc.
	U. S. P. limits	0.237–0.263
59413	Hindle's Drug Store, Bridgeport (Sharp & Dohme)	0.218
59038	Farnum's Drug Store, Canaan (Parke-Davis)	0.186
59012	Gladding Drug Co., Hartford (Lilly)	0.223
59008	Griswold Drug Co., Hartford	0.224
59436	Starr Bros., New London (United Drug)	0.230
59044	Oxley's Drug Store, Southington (Schieffelin)	0.216
58996	J. H. Quinn & Co., So. Manchester (United Drug)	0.232
58964	F. J. Carroll, Stonington (United Drug)	0.218
58987	Suffield Pharmacy, Suffield (McKesson & Robbins)	0.245
58989	Thompsonville Drug Co., Thompsonville (Upjohn)	0.230
59022	Operman's Drug Store, Torrington (Wyeth)	0.229
59035	Bannon's Drug Store, Winsted (Warner)	0.217

SPIRIT OF ETHYL NITRITE

(Sweet Spirit of Nitre)

This preparation should contain not less than 3.5 per cent, and not more than 4.5 per cent, of ethyl nitrite ($C_2H_5\ NO_2$).

The U. S. Pharmacopoeia cautions that it should be kept "in small, well-stoppered, dark, amber-colored bottles, in a cool, dark place, remote from fire". Attention to this instruction insures against serious loss of strength for many months—a year or more. Substandard samples are largely explainable by failure to observe this feature of the Pharmacopoeia instructions. Official samples of this drug are always assayed promptly to guard against deterioration after the sample is submitted to the laboratory.

Forty-five samples were examined of which sixteen were considerably deficient, i.e. less than 90 per cent of the minimum standard.

Analyses are given in Table 15.

TABLE 15. ANALYSES OF SPIRIT OF ETHYL NITRITE

No.	Dealer	Ethyl nitrite %
	U. S. P. limits	3.5–4.5
59405	McQuade's Corner Drug Store, Ansonia	2.7
59403	North End Pharmacy, Ansonia	2.7
59031	Ralph Nickolson, Bloomfield (Brewer)	3.5
59247	Brewers Drug Store, Branford	4.1
59409	Leverly Drug Store, Bridgeport	4.8
59414	Burstein's Pharmacy, Bridgeport (Regal)	3.2
59208	Whelan Drug Store, Bristol (Whelan Lab., Inc.)	3.6
59037	Freeman Dempsey, Canaan (Sisson)	3.7
59043	Gladding Drug Co., Cheshire (Apoth. Hall)	0.5
59427	Chester Pharmacy, Chester	4.2
58973	Hitchcock's Pharmacy, Cromwell	1.7
58796	M. H. Berthiaume Pharmacy, Danielson (United Drug)	4.0
59004	Grafolos Pharmacy, Derby (Hance Bros. and White)	3.5
59000	C. F. Hotchkiss, Derby	4.1
59431	Chatham Pharmacy, East Hampton	1.7
59428	Hyde Drug Co., Essex (Purepac Corp.)	3.5
59205	Kent's Pharmacy, Forestville (Moore & Co.)	3.2
60054	Boswell Drug Co., Greenwich	1.4
59249	Frank F. Douden, Guilford	3.6
59009	Hoffman Drug Co., Hartford	3.5
58968	Rialto Drug Co., Hartford (Mallinckrodt)	2.1
58978	Whelan Drug Store, Middletown (Whelan Lab., Inc.)	3.3
58982	H. F. Pegeon, Meriden (Royal)	4.1
58979	Lynch Drug Co., Meriden (Wyeth)	3.6
59430	Moodus Drug Store, Moodus	2.8
59235	Lavellie & Breman, Moosup (Smith, Klein & French)	4.1
59202	Norveck's Pharmacy, New Britain	2.3
59032	Marble Drug Store, New Hartford	2.2
59438	State Drug Stores, Inc., New London	4.4
59435	E. Gensburg, New London (Dr. Higgin's Lab.)	3.5
59434	Niantic Pharmacy, Niantic (Royal)	3.6
59239	H. H. Canfield, No. Woodbury	4.6
59227	Wm. D. Ricker, Norwich (Lee & Osgood)	2.6
58965	Higgin's Pharmacy, Pawcatuck (Claflin)	3.3
58794	Donahue Drug, Inc., Putnam (Schieffelin)	3.4
58793	Joseph A. P. Gagne, Putnam (McKesson & Robbins)	4.1
59214	Vincent's Pharmacy, Rockville (Moore & Co.)	2.5
59001	Mahoney's Drug Store, Shelton (Smith, Klein & French)	3.6
59219	McCormick's Drug Store, Stafford Springs	2.0
59426	Benoit's Pharmacy, Taftville	1.7
59237	Center Drug Store, Terryville	2.0
59236	Pelchar's Pharmacy, Terryville (Apoth. Hall)	3.3
58990	Pleasant St. Pharmacy, Thompsonville (Mass. Wholesale Drug Co.)	3.7
59018	Smith's Pharmacy, Torrington (Lilly)	2.0
59024	South End Pharmacy, Torrington	4.9

SULPHURIC ACID, DILUTE

Dilute sulphuric acid of pharmacopoeia strength should contain not less than 9.5, nor more than 10.5, per cent of sulphuric acid. Of twenty

samples examined, only six were within these limits or satisfactorily close to them. Eleven were too strong, seven of them being from one and one-half to twice the official strength. This, no doubt, comes from making dilution on the basis of volume instead of weight and overlooking the fact that concentrated sulphuric acid is nearly twice as heavy as an equal volume of water. The Pharmacopoeia plainly directs to make the dilution on the basis of the weight of sulphuric acid. One sample, 59410, was extremely dilute.

Analyses are given in Table 16.

TABLE 16. ANALYSES OF DILUTE SULPHURIC ACID

No.	Dealer	Sulphuric acid %
	U. S. P. limits	9.5–10.5
59410	Schine's Pharmacy, Bridgeport	0.6
59412	Nagys Pharmacy, Bridgeport	9.9
59244	Kinner's Drug Store, Danbury	15.1
59415	Colonial Pharmacy, Farmington	2.2
58971	Roosevelt Drug Co., Hartford	11.9
59233	Redding's Drug Store, Jewett City	12.8
59408	J. Harrison Monroe, Madison	15.2
58981	Broderick & Curtin, Meriden	9.8
58976	Park View Pharmacy, Middletown	16.4
58977	Pelton's Pharmacy, Middletown	16.2
59401	Adam's Drug Store, Naugatuck	8.0
59417	Swzager, New Britain	18.5
59231	Liggett's Drug Store, Norwich	12.4
58790	Burt's Drug Store, Putnam	18.4
58994	Magnell's Drug Co., So. Manchester	10.5
58997	Arthur Drug Stores, Inc., So. Manchester	21.1
59020	Webb & Seigel, Torrington	9.5
58972	Wethersfield Pharmacy, Wethersfield	12.7
59224	Bay State Drug Co., Willimantic	10.1
58983	Prouty's Pharmacy, Windsor	10.3

Turpentine

One sample of turpentine, 60097, taken from stock of the Quality Paint Store, Waterbury, was found to meet standard specifications.

WITCH HAZEL WATER

This is a National Formulary product. Among the specifications are the requirements that the alcoholic strength should not be less than 14 per cent by volume and the test for wood alcohol should be negative. Solids should not exceed 0.025 gram per 100 cc.

Sixteen samples were tested. Two were low in alcohol and one, 59243, gave a positive test for wood alcohol.

Analyses are given in Table 17.

TABLE 17. ANALYSES OF WITCH HAZEL WATER

No.	Dealer and manufacturer	Alcohol by vol. %	Wood alcohol test	Solids gm/100 cc.
	N. F. Specifications	14.0	negative	0.025
59209	Whelan Drug Store, Bristol (Perry Lab.) ..	12.4	negative	0.003
59039	Service Pharmacy, Canaan (United)	14.1	negative	0.002
59243	Merrill Cut Rate Store, Danbury	13.9	positive	0.009
59003	E. L. D. Pharmacy, Derby (National)	14.2	negative	0.003
59015	Capitol Drug Store, Hartford (Ramses) ...	14.6	negative	0.004
59010	Hoggman Drug Co., Hartford (Hygienic Pharm.)	13.9	negative	0.013
58980	Brook's Cut Rate Store, Meriden (Good Prod. Co.)	19.6	negative	0.004
58960	Carroll Agency, Milford (Carroll)	14.4	negative	0.005
58956	A. H. Botsford, Milford (Gotham Pharm.) ..	14.4	negative	0.007
58955	A. H. Botsford, Milford (Nasol Lab.)	14.2	negative	0.003
58967	Allied Stores, Hamden (Dunhill Lab.)	9.9	negative	0.004
59040	Salisbury Pharmacy, Salisbury (Dickenson)	14.2	negative	0.007
59217	Delmonico Drug Shoppe, Stafford Springs (Gibson-Howell)	14.1	negative	0.003
60055	North Stamford Pharmacy, Stamford (Superior)	14.2	negative	0.004
58953	Wm. H. St. John Co., Stratford (United) ..	14.0	negative	0.016
58991	Carroll's Store, Thompsonville (Cunningham)	14.4	negative	0.004

MISCELLANEOUS MATERIALS

FOODS, DRUGS, ETC.

One hundred and sixteen samples of miscellaneous character have been examined. For the most part these require no special mention but the following are cited as a matter of interest and for ready reference. Partial analyses show constituents found or indicated. Other medicaments or ingredients, if present, were not detected.

60705, 60706. *Nu-Veg-Sal.* Modern Health Products, Inc., Milwaukee. Nature Food Center, Inc., Hartford. This is table salt to which vegetable material has been added to prevent caking and facilitate free-running. No. 60705 consisted roughly of 2.7 per cent moisture, 20 per cent organic or vegetable matter and 77.4 per cent mineral material, practically all salt. No. 60706 consisted of about 0.6 per cent moisture, 3.5 per cent of vegetable matter and 95.9 per cent of mineral matter, practically all salt. Emphasis is laid on the fact that vegetable material, instead of mineral, has been used to insure free-running, and the "nutrofied" character of the article is stressed. However, when we consider the small amount of salt that an individual eats, the increase in nutriment that he gets, even if his salt intake contains as much as 20 per cent of nutritive vegetable material, is quite insignificant.

58515. *Maple butter.* There is no official definition of maple butter. The product submitted, made by E. R. Jodous, South Manchester, appeared to be made from maple and other sugar and gelatin.

Partial analysis:

Moisture 20.06 per cent; total ash 0.35; water sol. ash 0.26; water-insol. ash 0.09; protein 0.69; Winton lead No. 0.57. Gelatin present.

The product was labelled as "a compound" and our regulations provide that a product so declared shall name the ingredients. It is desirable that all mixed foods, not officially defined, declare the ingredients whether or not they are marketed as compounds.

5832. *Washing Powder.* Newlife Service, Pawtucket, R. I. Sample submitted by the Dairy and Food Commissioner. It consisted essentially of trisodium phosphate, colored with phenolphthalein; with traces of chloride, sulphate and carbonate, and a possible trace of sodium hydroxide, the latter not warranting objection to the claim "contains no caustics".

5346. *Columbia Modified Soda No. 200.* Columbia Alkali Corp., Barberton, Ohio. Submitted by F. O. Miner, Conn. Poultry Producers Assoc., New Haven. (Not an original package).

Examination:

Ammonia none; sodium in quantity; carbonate in quantity; chloride trace; sulphate, phosphate and silicate none. Completely soluble in water. Sodium carbonate, by titration, 62.23 per cent; sodium bicarbonate, by titration, 20.86 per cent. Calculated composition: Na_2CO_3 62.23; $NaHCO_3$ 20.86 per cent; NaCl, trace; water, by difference, 16.91 per cent.

2900. *San-O-Clean.* Sanitary Products Co., New Britain. Submitted by Dept. of Health, New Britain.

Examination:

White powder alkaline to phenolphthalein; faint odor of chlorine; sodium present; phosphate in quantity; chloride some, sulphate and hypochlorite faint trace; borate, silicate and organic matter none. Ash 48.21 per cent, P_2O_5 18.44 per cent; CO_2 1.55 per cent; NaOCl 0.01 per cent. Calculated composition: Na_3PO_4 42.58 per cent; Na_2CO_3 3.72 per cent; NaOCl 0.01 per cent; NaCl and Na_2SO_4 1.90 per cent; water, probably all as water of crystallization, 51.79 per cent.

The product is somewhat dehydrated. Qualitatively it is similar to "Diversol" (Conn. Exp. Sta. Bull. 346, p. 223).

5721. *Luippold Mineral Water.* Chas. H. Rahn, Prop., West Hartford. (Earlier analysis, Conn. Exp. Sta. Bul. 267, p. 489).

Analysis in parts per million:

Solids 7968; non-vol. solids 6170; silica (SiO_2) 32; ferrous iron (Fe) 8.9; ferric iron (Fe) 12; aluminum (Al), 0.8; calcium (Ca) 526; magnesium (Mg) 238; manganese (Mn) 14.6; sodium (Na) 1410; potassium (K) 54.4; lithium (Li) 2.1; chloride (Cl) 3506; sulphate (SO_4) 484; bicarbonate (HCO_3) by titration, 83.6; ammonium, barium and strontium, if present, not determined.

Calculated composition:

	p.p.m.
Lithium chloride (LiCl)	12.8
Potassium chloride (KCl)	104
Sodium chloride (NaCl)	3583
Magnesium chloride ($MgCl_2$)	932
Calcium chloride ($CaCl_2$)	906
Calcium sulphate ($CaSO_4$)	676
Manganous sulphate ($MnSO_4$)	11.0
Manganous bicarbonate [$Mn(HCO_3)_2$]	33.8
Ferrous bicarbonate [$Fe(HCO_3)_2$]	22.8
Ferric bicarbonate [$Fe(HCO_3)_3$]	31.7
Aluminum bicarbonate [$Al_2(HCO_3)_3$]	3.5
Silica (SiO_2)	32
Carbonic acid (H_2CO_3)	8.6

5368. *Urinary Calculi.* Submitted by Dr. Anthony I. Mendillo, New Haven. Large stone weight 11.3 grams, small stone, 0.2 gram.

Qualitative tests:

No visible change on ignition beyond slight charring. Ignited material dissolved in acid with effervescence, unignited dissolved with no effervescence. Tests for calcium and phosphate in ignited material strongly positive. Unignited material dissolved in sulphuric acid decolorized potassium permanganate solution. Heated with sodium hydroxide did not turn red litmus blue. Murexide test negative.

The stones contain phosphate and oxalate and belong to the class of phosphate stones. They do not contain ammonium urate (See Plummer "Practical Organic and Biochemistry" 1918, p. 568).

5973. *Slim.* Health Products, Milwaukee, Wis. Sold by Modern Health Stores, Hartford, as a reducing beverage, non-habit-forming. The product appeared to consist of or contain senna leaves, anise seed, kelp or a similar material, orange peel, bachelor buttons, chickweed, an emodin-bearing bark resembling cascara sagrada and leaves resembling pennyroyal. No evidence of dinitrophenol was found. On mixing a medicinal dose of dinitrophenol with the product, no difficulty was had in detecting that drug. Dinitrophenol has been reported in certain products offered as reducing foods but this sample did not contain that substance.

6382. *Barbital Tablets.* Submitted by the State Board of Health. The medicine was suspected of having been tampered with. The tablets were discolored and qualitative tests showed the presence of lead acetate in quantity. The tablets had become impregnated with lead acetate accidentally or otherwise. No cantharidin, alkaloids or arsenic was found. No other metals were found except a trace of iron.

5924. *Wilson's Original Compound Wa-Hoo Bitters.* Old Indian Medicine Co., Toledo, Ohio. Submitted by Department of Charities, Winsted. Persons taking this medicine had complained of feeling "dopey". The bottle containing the sample had been opened. The compound was claimed to be "a purely mineral and vegetable compound free from all mineral poisons, also free from all poisonous drugs such as morphine, heroin, opium, cocaine, nux vomica, strychnine"; and to contain no alcohol.

Tests indicated the product to contain salicylic acid, magnesium sulphate and possibly some extractive of prickly ash. There is no chemical test for the drug "wahoo". If this were present, it may have caused the effects complained of in some individuals; or users may have been susceptible to salicylic acid. No evidence of quinine, strychnine or opium alkaloids was found.

4551. *Pro Ker Milk No. 10.* Pro-Ker Laboratories, New York. This preparation was a milk-white, perfumed liquid.

Partial analysis:

Solids 1.51 grams per 100 cc; ash, 0.30; soap (calc. as potassium oleate) 0.25; alk. of ash, as K_2CO_3, 0.054.

The product appeared to be a perfumed water suspension of fatty material stabilized with a little potassium soap and free fatty acid. There was not more than a possible trace of arsenic.

4730. *Hess Hair Milk.* Hess Laboratories, St. Paul, Minn. It was claimed that this preparation would restore the natural color of hair, banish dandruff, prevent baldness, relieve eczema and itching scalp etc.

The product was a highly perfumed, colorless liquid with some pale yellow sediment. It was acid to litmus and qualitative tests showed sulphur, glycerine in quantity, lead, alcohol, quinine, acetate, and a trace of material extracted by chloroform from acid solution. There were also traces of chloride, iron, sodium and potassium. No evidence was found of peroxide, cantharidin, caffeine, para phenylenediamine, ammonium salts, nitrate, sugars, borate, formaldehyde, acetone, or methyl or isopropyl alcohols.

Partial analysis:

Solids 8.44 grams per 100 cc, sulphated ash, 0.34; insoluble solids, 0.68; insoluble ash, 0.11; volatile insoluble solids, 0.57; alcohol by volume 29.72.

The preparation from the analysis appeared to be a dilute alcohol-glycerine solution of lead acetate and quinine hydrochloride containing about 30 per cent of alcohol, approximately 7 per cent of glycerine, about 0.57 per cent of undissolved sulphur, and about 0.43 per cent of lead acetate, $Pb(C_2H_3O_2)_2 \cdot 3\,H_2O$. Lead acetate is poisonous and therefore dangerous because it is absorbed to some extent through the skin and is cumulative in the body.

7221. *Siroil.* Siroil Laboratories, Detroit. It was labelled: For treatment of psoriasis, external use only. The product was a light-colored emulsion with a phenolic odor.

Partial analysis:

Moisture (xylene distillation), 2.4 per cent; total oil, 92.0 per cent; ash, 0.07 per cent. No evidence of alkaloids, ammonia, or arsenic. Trace of copper and possible trace of phenolic substances. Mineral oil, fatty acids and soap present. No evidence of gums or triethanolamine.

The preparation appeared to be a soap emulsion of yellow mineral oil, probably containing a trace of phenol. It contained a trace of copper but no arsenic.

5729. *Paint.* Submitted by C. P. Waterman, CWA Purchasing Agent, Hartford.

Analysis:

	Found %	Guaranteed %
Pigment	60.0	65.0 (not less than)
Vehicle (liquid)	40.0	35.0 (not less than)
Volatile thinner	59.5	
Non-vol. vehicle	40.5	40.0 (not less than)
Water	trace	1.0 (not more than)
Coarse particles and skins	0.1	2.0 (not more than)

The above result for pigment may be slightly low due to difficulty in separating the pigment from the vehicle; but if there were very much more pigment than the analysis shows, the proportion of non-volatile vehicle would be less than the 40 per cent given in the specification.

5442. *Paint.* Submitted by John Z. LaBelle, Second Selectman, Danielson. According to the submitted statement of composition the pigment should have consisted entirely of carbonate of white lead and zinc, the vehicle of linseed oil and turpentine.

Analysis of whole:

Pigment	66.5%
Vehicle	33.5

Analysis of pigment:

Insoluble, silicious matter	4.56%
$BaSO_4$	3.74
PbO	50.09
ZnO (total)	29.90
Soluble SO_3	6.89
Soluble Ba, Ca, Mg, Fe, Al	none or trace

Analysis of vehicle:

Thinner	16.9%
Oil and driers	83.1 (boiled linseed oil indicated by tests)

Calculated composition of pigment:

Insoluble silicious matter	4.56%
Basic sulphate white lead	33.25 (contains a little zinc oxide)
Basic carbonate white lead	29.65
Barium sulphate	3.74
Zinc oxide	28.07
Undetermined	0.73

The analysis showed considerable variation from the claimed composition. Only about 58 per cent of the pigment was basic carbonate of white lead and zinc and the remainder was basic sulphate of white lead, barium sulphate and silicious material. The vehicle contained little, if any, turpentine.

6725. *Soil.* Submitted by New Haven Water Co. Application of 100 pounds of As_2O_3 per acre each year for three years.

6726. *Soil.* Same source as above, application 100 pounds of As_2O_3 per acre for one year.

Tests were made on fine material free from stones and coarse debris.

	6725	6726
Water-sol. As_2O_3	125 p.p.m.	65 p.p.m.
Total As_2O_3	145 p.p.m.	115 p.p.m.

6161. *Pith of Rhubarb Stalks.* Submitted by Department of Entomology.

Moisture in the sample as submitted: 94.4 per cent.

Analysis, dry basis:

Ash 14.76 per cent, protein (N x 6.25) 16.91 per cent, fiber 12.63 per cent, sucrose 0.54 per cent, invert sugar 2.87 per cent, total sugars 3.41 per cent, starch trace, nitrogen-free extract 54.44 per cent, fat (ether extract) 1.26 per cent.

Analysis of ash:

SiO_2 0.61 per cent, Fe_2O_3 + Al_2O_3 0.41 per cent, CaO 16.44 per cent, MgO 2.15 per cent, Mn_3O_4 0.04 per cent, Na_2O 1.18 per cent, K_2O 46.46 per cent, Cl 3.36 per cent, SO_3 1.63 per cent, P_2O_5 5.94 per cent, CO_2 present.

MATERIALS EXAMINED FOR POISONS

Seventy-four samples of various materials have been examined for foreign, deleterious or poisonous substances. Many of these were foods suspected of having caused illness but in which nothing was disclosed by our examination that would suggest that the food was a probable cause of the alleged symptoms. One sample, 6383, residual liquid in a coffee pot, suspected of having been put there with malicious intent, was found to contain potassium cyanide in quantity.

The samples were submitted by health officers and the Dairy and Food Commissioner, to whom complaints have come, and in some cases by persons directed to consult this laboratory.

Twenty-five of the specimens in this group were from domestic animals and poultry suspected of having died of poison. Such specimens have come from the Commissioner on Domestic Animals, from veterinarians consulted, or from Dr. Erwin Jungherr, pathologist at the Storrs Station. In nine of these, definite evidence of poisons was found. The poisons were strychnine in five samples, arsenic in two, copper and arsenic in one, and lead in one.

STATE WATER COMMISSION

Ten samples of metal chips were examined for copper, zinc and chromium content. This work was done for the State Water Commission in connection with their study of the disposal of metallurgical wastes.

COLLABORATIVE STUDIES OF METHODS

Collaboration with the Association of Official Agricultural Chemists in the study of analytical methods of analysis has been continued. Mr. Mathis has served as collaborator on methods for the determination of fat in dried milk products, calcium in bone ash (bio-assay for vitamin D), iodine and calcium in mineral feeds, and hydrocyanic acid in foods (beans). Mr. Shepard collaborated on qualitative tests for gums in foods and coloring matters in whiskey; and Mr. Walden on methods for the determination of milk solids in bread. Dr. Fisher served as referee on methods for the determination of santonin.

Mr. Nolan has continued to collaborate in the programs of the American Oil Chemists Society and of the F. S. Royster Guano Co. in analyses of cottonseed meal and mixed fertilizers.

BABCOCK GLASSWARE, ETC.

Babcock glassware and dairy thermometers tested during the past year are summarized as follows:

	Total	Inaccurate
Milk test bottles	1566	0
Cream test bottles	570	0
Pipettes, milk	403	0
cream	12	0
Thermometers	128	0
Totals	2679	0

Four lactometers were compared with our standard instrument.

ANALYSES OF COMMON FOODS

Bulletin 286, published by this Station in 1927, contained analyses of many common foods and of a large number of special purpose foods (so-called diabetic foods), as well.

The discovery of insulin has made such important changes in the practice of diabetic dietetics that common foods may be used quite liberally, and there is little need for special foods. Joslin's "Diabetic Manual",[1] in the latest edition, omits all analyses of special foods. The Committee on Foods of the American Medical Association has issued the following general decision on the subject:

SO-CALLED SPECIAL "DIABETIC FOODS" OR SPECIAL FOODS FOR SUGAR AND CARBOHYDRATE RESTRICTED DIETS

There is authoritative evidence that commercially prepared, special diabetic foods are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. Artificial substitutes for ordinary foods are not to be favored; it is much better for the diabetic patient to learn how to plan his diet with foods in common use and readily available. The diet should be exactly prescribed in carbohydrate, protein and fat, and total calories.

The designation of a food as a diabetic food merely because it is low in carbohydrates is unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Except for the necessity of restricting foods to avoid overstepping the food tolerance, there are no special diabetic nutritional requirements. The exploitation of starch-free or low carbohydrate foods containing an excess of protein for use by diabetic patients is unwarranted. Protein may be tolerated almost as poorly, if not quite as poorly, as starch in diabetes.

Lay advertising for these special foods shall not include disease names such as diabetes nor directly or indirectly indicate that the foods are curative or increase the ability of the body to utilize sugar, or give the impression of harmlessness when eaten in unrestricted amounts by diabetic patients. Foods marketed for the sick with diabetes shall not be advertised to the public except under the restrictions just stated; advertising of a medicinal or therapeutic character shall be limited to medical periodicals or material for physicians exclusively. The package label shall conform to the preceding requirements but may bear statements that the food is suitable for incorporation in diets indicated for moderate restriction of carbohydrates. Recipes on the label or in the advertising shall prescribe the quantities of each ingredient by weight and state the approximate protein, fat and carbohydrate content of the finished product.

[1] Lea and Febiger, Philadelphia, 1934.

SPECIAL PURPOSE FOODS FOR DIETS RESTRICTED IN DEXTROSE FORMERS

Special Purpose Foods, such as special bread, cake and flour, for diets restricted in dextrose formers, to be eligible for acceptance, excepting in cases of special adaptability, shall contain dextrose formers yielding dextrose in an amount not greater than 3.3 grams dextrose per 100 cc. (computing the dextrose equivalence as the carbohydrate, plus 58 per cent of the protein, plus 10 per cent of the fat content of the food). The labels and advertising shall comply with the Committee Rule "Special Purpose Foods."

Since our Bulletin 286 was issued, a number of revisions and additions have been made in the data given for common foods, and these are included in Table 18.[1]

Many analyses are cited from the monograph of Atwater and Bryant,[2] Sherman "Food Products"[3] and Leach "Food Inspection and Analysis".[4] Chatfield and McLaughlin and Chatfield and Adams, on the "Proximate Composition of Fresh Fruits"[5] and the "Proximate Composition of Fresh Vegetables",[6] respectively, provide valuable material and have been freely consulted. Many analyses made from time to time in this laboratory and some cited from reports of other Experiment Stations are included. Analyses of malt beverages are taken chiefly from our own report[7] and from the text of Wahl and Henius.[8]

In comparing analyses of foods as reported by various authors, many discrepancies will be noted. This is, of course, perplexing to the layman and to the physician and the dietitian as well. It is in part due to analytical differences that are bound to occur between analysts and also, and more particularly, because of variety and degree of ripeness or maturity in the case of natural foods, and of methods of manufacture in the case of fabricated products.

It is important to understand the significance of terms used in a proximate analysis. *Protein* means nitrogen multiplied by the conventional factor 6.25, on the assumption that protein contains 16 per cent of nitrogen. While it is known that many proteins contain more or less than 16 per cent of nitrogen, it is not possible generally to make allowances for this fact in practice. In the case of wheat proteins and those of milk, more accurate factors, 5.7 and 6.38, are known and are usually applied. *Fat* means substances soluble in ether; substances other than true fat or oil are also soluble in ether. This is particularly true in the case of fruits and vegetables. *Carbohydrate* means generally such materials as starch, sugar and related substances represented in the conventional proximate analysis as nitrogen-free extract, and obtained by deducting the percentages of moisture, ash, protein, fat and fiber from 100 per cent. In Table 18, where

[1] This table and some of the accompanying discussion was prepared by the writer for Dr. E. P. Joslin's text, "Treatment of Diabetes Mellitus," (Lea and Febiger, Phila.). The material is used here with the permission of Dr. Joslin and his publishers.
[2] Bull. 28 Revised, U. S. Dept. Agri. Office of Exp. Stations.
[3] The Macmillan Co., New York.
[4] Wiley and Sons, New York.
[5] Circ. 50, U. S. Dept. Agr.
[6] Circ. 146, U. S. Dept. Agr.
[7] Conn. Exp. Sta., Bull. 363, 1934.
[8] American Handy Book, Brewing and Malting.

the significance of these several terms is known to differ from the above, the explanation is given in a foot note.

Dietitians, particularly those concerned with dietaries for diabetics, are interested in knowing the available or assimilable nutrients in foods. There is not enough specific information on this subject to make it possible to give figures for gross and available nutrients in foods generally. In some cases it is practicable to make a distinction between starch and sugars on the one hand and those related substances known as hemicellulose complexes on the other, the latter not being regarded as important sources of energy in human nutrition. McCance and Lawrence[1] have contributed notably in this field for a number of fruits, nuts and vegetables. They regard as available carbohydrate, total reducing sugar, including that which may be derived from starch, corrected for pentose-yielding carbohydrate. This latter group, in their experience, is very nearly the same as the non-fermentable sugars for the foods examined. The non-availability of this portion of the total carbohydrate was checked by feeding experiments.

As a matter of practical dietetics, however, when one considers the range of variation in carbohydrate content that may be found in a given natural food due to variety, conditions of growth and degree of ripeness or maturity, distinctions between gross and available carbohydrate are of diminished importance. If a diabetic dietary with reference to carbohydrate is formulated on the basis of gross carbohydrate as represented in the usual proximate analysis, the error will be on the side of safety because the patient's tolerance will not have been over-estimated and his allotment can be liberalized as his tolerance warrants.

In Table 18, where calorie values have been given in the absence of determined values for all constituents, the items not determined are assumed to be negligible. In the case of alcoholic and other beverages, the carbohydrate values are in many instances grams per 100 cc but they have been stated as percentages, because, for practical purposes, the differences are not significant.

[1] Medical Research Council, Special Report Series, No. 134, London, 1934.

TABLE 18. ANALYSES OF COMMON FOODS
(*Analyses are of edible portion unless otherwise stated*[1])

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Meat and Meat Products							
Beef, fresh:	%	%	%	%	%	%	
Brisket, medium fat	54.6	0.9	15.8	....	....	28.5	319
Chuck rib	66.8	1.0	19.0	....	....	13.4	197
Flank	59.3	0.9	19.6	....	....	21.1	268
Loin	61.3	1.0	19.0	....	....	19.1	247
Neck	66.3	1.0	20.7	....	....	12.7	197
Plate	56.3	0.8	16.8	....	....	26.9	309
Ribs	57.0	0.9	17.8	....	....	24.6	293
Round	67.8	1.1	20.9	....	....	10.6	179
Rump, lean	65.7	1.0	20.9	....	....	13.7	207
Shank, fore	70.3	0.9	21.4	....	....	8.1	158
hind	69.6	1.0	21.7	....	....	8.7	165
Shoulder and clod	68.9	1.1	20.0	....	....	10.3	173
Soup Stock	89.1	3.6	5.8	....	....	1.5	36
Miscellaneous cuts, free from visible fat	73.8	1.2	22.4	....	....	2.9	116
Beef organs, fresh:							
Brain	80.6	1.1	8.8	....	....	9.3	119
Heart	62.6	1.0	16.0	....	....	20.4	248
Kidney, as purchased	63.1	1.0	13.7	....	trace	1.9	72
Liver, as purchased	65.6	1.3	20.2	....	2.5[2]	3.1	119
Lungs, as purchased	79.7	1.0	16.4	....	....	3.2	94
Marrow, as purchased	3.3	1.3	2.2	....	....	92.8	844
Sweet breads, as purchased	70.9	1.6	16.8	....	....	12.1	176
Suet, as purchased	13.7	0.3	4.7	....	....	81.8	755
Tongue	70.8	1.0	18.9	....	....	9.2	158
Beef, cooked:							
Roast	....	....	22.3	....	....	28.6	347
Steak, round, fat partly removed	63.0	1.8	27.6	....	....	7.7	180
sirloin	63.7	1.4	23.9	....	....	10.2	187
tenderloin	54.8	1.2	23.5	....	....	20.4	278
Beef, canned:							
Corned	56.4	4.7[3]	26.6	....	....	11.4	209
Dried and smoked	47.4	12.5[4]	32.6	....	....	7.5	198
Kidney, stewed	71.9	2.5	18.4	....	2.1	5.1	128
Luncheon	52.9	4.8	27.6	....	....	15.9	254
Roast	58.9	1.3	25.9	....	....	14.8	237
Sweetbreads	69.0	2.0	20.2	....	....	9.5	166
Tongue, ground	49.9	4.0	21.4	....	....	25.1	312
whole	51.3	4.0	19.5	....	....	23.2	287
Tripe	74.6	0.5	16.8	....	....	8.5	144

[1] The difference between the sum of the percentages given on the "as purchased" basis and 100 per cent represents refuse. In other cases where percentages do not total exactly 100 per cent, the percentages given are "observed" values and not "by difference."
[2] Largely, or in part, glycogen.
[3] Average 3.4 per cent salt (sodium chloride).
[4] Average 9.7 per cent salt (sodium chloride).

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Meat and Meat Products—*Continued*							
Beef, corned and pickled:	%	%	%	%	%	%	
Corned beef, all analyses	53.6	4.9	15.6	....	....	26.2	298
Spiced, rolled	30.0	6.8	12.0	....	....	51.4	511
Tongue, pickled	62.3	4.7	12.8	....	....	20.5	236
Tripe	86.5	0.3	11.7	....	0.2	1.2	58
Beef, dried, salted and smoked	54.3	9.1	30.0	....	....	6.5	179
Veal, fresh:							
Breast	68.2	1.0	20.3	....	....	11.0	180
Chuck	73.8	1.0	19.7	....	....	5.8	131
Flank, as purchased	66.9	1.0	20.1	....	....	12.7	195
Leg	71.7	1.1	20.7	....	....	6.7	143
Leg cutlets	70.7	1.1	20.3	....	....	7.7	151
Loin	69.5	1.1	19.9	....	....	10.0	170
Rib	69.8	1.1	20.2	....	....	9.4	165
Rump	62.6	1.1	19.8	....	....	16.2	225
Shoulder	73.4	1.3	20.7	....	....	4.6	124
Veal organs, fresh:							
Heart, as purchased	73.2	1.0	16.8	....	....	9.6	154
Kidney, as purchased	75.8	1.3	16.9	....	....	6.4	125
Liver, as purchased	73.0	1.3	19.0	....	....	5.3	124
Lungs, as purchased	76.8	1.1	17.1	....	....	5.0	113
Mutton, fresh:							
Chuck	48.2	0.8	14.6	....	....	36.8	390
Leg, hind, medium fat	62.8	1.0	18.5	....	....	18.0	236
Loin	50.2	0.8	16.0	....	....	33.1	362
Shoulder, medium fat	61.9	0.9	17.7	....	....	19.9	250
Mutton organs, fresh:							
Heart, as purchased	69.5	0.9	16.9	....	....	12.6	181
Kidney, as purchased	78.7	1.3	16.5	....	....	3.2	95
Liver, as purchased	61.2	1.7	23.1	....	5.0[1]	9.0	193
Lungs, as purchased	75.9	1.2	20.2	....	....	2.8	106
Mutton, cooked:							
Leg roast	50.9	1.2	25.0	....	....	22.6	303
Mutton, canned:							
Corned	45.8	4.2	28.8	....	....	22.8	320
Tongue	47.6	4.8	24.4	....	....	24.0	314
Lamb, fresh:							
Breast	56.2	1.0	19.1	....	....	23.6	289
Leg, hind, medium fat	63.9	1.1	19.2	....	....	16.5	225
Loin	53.1	1.0	18.7	....	....	28.3	330
Shoulder	51.8	1.0	18.1	....	....	29.7	340
Lamb, cooked:							
Chops, broiled	47.6	1.3	21.7	....	....	29.9	356
Leg, roast	67.1	0.8	19.7	....	....	12.7	193

[1] Largely, or in part, glycogen.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Meat and Meat Products—*Concluded*							
Lamb, canned:	%	%	%	%	%	%	
Tongue, spiced, cooked	67.4	0.5	13.9	....	....	17.8	216
Pork, fresh:							
Ham, lean	60.0	1.3	25.0	....	....	14.4	230
Ham, medium fat	53.9	0.8	15.3	....	....	28.9	321
Head cheese	43.3	3.3	19.5	....	....	33.8	382
Loin (chops), lean	60.3	1.0	20.3	....	....	19.0	252
Loin (chops), medium fat	52.0	1.0	16.6	....	....	30.1	337
Shoulder	51.2	0.8	13.3	....	....	34.2	361
Side, fat	29.4	0.4	9.4	....	....	61.7	593
Side, lean	34.4	0.5	9.1	....	....	55.3	534
Pork organs, fresh:							
Brains, as purchased	75.8	1.6	11.7	....	....	10.3	140
Heart, as purchased	75.6	1.0	17.1	....	....	6.3	125
Kidney, as purchased	77.8	1.2	15.5	....	0.7	4.8	108
Liver, as purchased	71.4	1.4	21.3	....	1.4[1]	4.5	131
Lungs, as purchased	83.3	0.9	11.9	....	....	4.0	84
Pork, pickled, salted or smoked:[2]							
Ham, lean, smoked	53.5	5.5	19.8	....	....	20.8	266
Ham, medium fat, smoked	40.3	4.8	16.3	....	....	38.8	414
Ham, luncheon, cooked	49.2	5.8	22.5	....	....	21.0	279
Shoulder, medium fat, smoked	45.0	6.7	15.9	....	....	32.5	356
Pig's tongue, pickled	58.6	3.6	17.7	....	....	19.8	249
Pig's feet, pickled	68.2	0.9	16.3	....	....	14.8	198
Salt pork, clear fat	7.9	3.9	1.9	....	....	86.2	783
Bacon, smoked	20.2	5.1	10.5	....	....	64.8	625
Ham, deviled	44.1	3.3	19.0	....	....	34.1	383
Sausage:							
Arles	17.2	7.3	26.8	....	....	50.6	563
Bologna	60.0	3.7	18.7	....	0.3[3]	17.6	234
Frankfurt	57.2	3.4	19.6	....	1.1[4]	18.6	250
Pork, as purchased	39.8	2.2	13.0	....	1.1[5]	44.2	454
Pork and beef, as purchased	55.4	1.0	19.4	....	....	24.1	295
Poultry, fresh:							
Chickens, broilers	74.8	1.1	21.5	....	....	2.5	109
Chicken heart, as purchased	72.0	1.4	20.7	....	....	5.5	132
Chicken gizzard, as purchased	72.5	1.4	24.7	....	....	1.4	111
Chicken liver, as purchased	69.3	1.7	22.4	....	2.4[1]	4.2	137
Fowls	63.7	1.0	19.3	....	....	16.3	224
Goose	46.7	0.8	16.3	....	....	36.2	391
Goose liver, as purchased	62.6	1.2	16.6	....	3.7[1]	15.9	224
Turkey	55.5	1.0	21.1	....	....	22.9	291

[1] Largely, or in part, glycogen.
[2] The range of salt content for cured pork products may be taken as 3 to 5 per cent.
[3] Carbohydrate range 0.2 to 3.1 per cent.
[4] Carbohydrate range 0.0 to 6.6 per cent.
[5] Carbohydrate range 0.0 to 8.6 per cent.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Fish and Fish Products							
Fish, fresh:	%	%	%	%	%	%	
Alewife	74.4	1.5	19.4	....	....	4.9	122
Bass, black	76.7	1.2	20.6	....	....	1.7	98
Bass, red	81.6	1.2	16.9	....	....	0.5	72
Bass, sea	79.3	1.4	19.8	....	....	0.5	84
Bass, striped	77.7	1.2	18.6	....	....	2.8	100
Blackfish	79.1	1.1	18.7	....	....	1.3	87
Bluefish	78.5	1.3	19.4	....	....	1.2	88
Butterfish	70.0	1.2	18.0	....	....	11.0	171
Cod	82.5	0.9	16.7	....	....	0.3	70
Cod, steak	79.7	1.2	18.7	....	....	0.5	79
Eels, salt water	71.6	1.0	18.6	....	....	9.1	156
Flounder	84.2	1.3	14.2	....	....	0.6	62
Haddock	81.7	1.2	17.2	....	....	0.3	72
Halibut	75.4	1.0	18.6	....	....	5.2	121
Herring	72.5	1.5	19.5	....	....	7.1	142
Mackerel	73.4	1.2	18.7	....	....	7.1	139
Perch	77.5	1.2	19.0	....	....	2.4	98
Pickerel	79.8	1.1	18.7	....	....	0.5	79
Porgy	75.0	1.4	18.6	....	....	5.1	120
Salmon	64.6	1.4	22.0	....	....	12.8	203
Shad	70.6	1.3	18.8	....	....	9.5	161
Shad roe	71.2	1.5	20.9	....	2.6	3.8	128
Smelt	79.2	1.7	17.6	....	....	1.8	87
Trout, brook	77.8	1.2	19.2	....	....	2.1	96
Trout, lake	70.8	1.2	17.8	....	....	10.3	164
Whitefish	69.8	1.6	22.9	....	....	6.5	150
Fish, preserved or canned:							
Cod, boneless	55.0	19.0[1]	27.7	....	....	0.3	114
Haddock, smoked	72.5	3.6	23.3	....	....	0.2	95
Halibut, smoked	49.4	15.0[2]	20.7	....	....	15.0	218
Herring, smoked	34.6	13.2[3]	36.9	....	....	15.8	290
Mackerel, salt, dressed	43.4	12.9[4]	17.3	....	....	26.4	307
Mackerel, salt, canned, as purchased	68.2	3.2	19.6	....	....	8.7	157
Mackerel, salt, canned in oil	58.3	4.1	25.4	....	....	14.1	229
Salmon, canned	63.5	2.6	21.8	....	....	12.1	196
Sardines, canned	52.3	5.6	23.0	....	....	19.7	269
Sardines, canned, in mineral oil	58.5	5.4	22.8	....	....	2.7[5]	116
Sturgeon, caviare, Russian	38.1	4.6	30.0	....	7.6	19.7	328
Tunney (Tuna), canned in oil	51.3	4.3	23.8	....	0.6	20.0	278
Turtle meat, canned	75.0	0.9	23.4	....	....	0.7	100
Shellfish, etc., fresh:							
Clams, long	85.8	2.6	8.6	....	2.0[6]	1.0	51
Clams, round	86.2	2.7	6.5	....	4.2[6]	0.4	46
Crabs, hard shell	77.1	3.1	16.6	....	1.2[6]	2.0	89
Crayfish	81.2	1.3	16.0	....	1.0[6]	0.5	73

[1] Largely salt.
[2] One sample contained 12.1 per cent salt.
[3] Salt content 11.7 per cent.
[4] Salt content 10.4 per cent.
[5] Total oil present, 13.3 per cent; approximately 20 per cent (equals 2.7 per cent), digestible.
[6] Largely, or in part, glycogen.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Fish and Fish Products—*Concluded*							
Shellfish, etc., fresh—*Concluded:*	%	%	%	%	%	%	
Lobster	79.2	2.2	16.4	....	0.4[1]	1.8	83
Mussels	84.2	1.9	8.7	....	4.1[1]	1.1	61
Oysters	86.9	2.0	6.2	....	3.7[1]	1.2	50
Scallops, as purchased	80.3	1.4	14.8	....	3.4[1]	0.1	74
Terrapin	74.5	1.0	21.2	....	....	3.5	116
Turtle, green	79.8	1.2	19.8	....	....	0.5	84
Shellfish, etc., canned:							
Clams, long, as purchased	85.8	2.2	8.3	....	2.7[1]	0.4	48
Clams, round, as purchased	87.0	2.1	8.9	....	0.9[1]	0.8	46
Crabs, as purchased	80.0	2.0	15.8	....	0.7[1]	1.5	80
Lobster, as purchased	77.8	2.5	18.1	....	0.5[1]	1.1	84
Oysters, as purchased	83.4	1.5	8.8	....	3.9[1]	2.4	72
Shrimp, as purchased	70.8	2.6	25.4	....	0.2	1.0	111
Turtle meat	75.0	0.9	23.4	....	....	0.7	100
Amphibia							
Frog's legs	83.7	1.0	15.5	....	....	0.2	64
Miscellaneous							
Gelatin	15.0	1.7	84.2[2]	....	none	0.1	338
Eggs[3]							
Eggs, fresh (exclusive of shell):							
Duck, whole egg	70.5	1.0	13.3	....	....	14.5	184
white	87.0	0.8	11.1	....	....	trace	44
yolk	45.8	1.2	16.8	....	....	36.2	393
Goose, whole egg	69.5	1.0	13.8	....	....	14.4	185
white	86.3	0.8	11.6	....	....	trace	46
yolk	44.1	1.3	17.3	....	....	36.2	395
Guinea fowl, whole egg	72.8	0.9	13.5	....	....	12.0	162
white	86.6	0.8	11.6	....	....	trace	46
yolk	49.7	1.2	16.7	....	....	31.8	353
Hen, whole egg	73.7	1.0	13.4	....	....	10.5	148
white	86.2	0.6	12.3	....	....	0.2	51
yolk	49.5	1.1	15.7	....	....	33.3	363
Plover, whole egg	74.4	1.0	10.7	....	....	11.7	148
Turkey, whole egg	73.7	0.9	13.4	....	....	11.2	154
white	86.7	0.8	11.5	....	....	trace	46
yolk	48.3	1.2	17.4	....	....	32.9	366
Turtle, fresh water	65.0	2.9	18.1	....	....	11.1	172
sea	76.4	0.4	18.8	....	....	9.8	163
Eggs, cooked:							
Hen, whole, boiled	73.2	0.8	13.2	....	....	12.0	161
white, boiled	86.2	0.6	12.3	....	....	0.2	51
yolk, boiled	49.5	1.1	15.7	....	....	33.3	363
Eggs, dehydrated	4.8	4.0	40.0	....	....	43.7	556

[1] Largely, or in part, glycogen.
[2] Nitrogen x 5.55.
[3] In eggs, as purchased, the shell comprises from 10 to 17 per cent of the weight of the whole egg.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Dairy Products, etc.							
Milk and Milk Products:	%	%	%	%	%	%	
Milk, whole	87.2	0.7	3.3	....	4.8	4.0	68
condensed (evaporated)	73.4	1.6	6.9	....	9.9	8.2	141
condensed (evaporated), sweetened	26.8	1.7	7.9	....	54.6[1]	9.0	331
skimmed	90.5	0.7	3.4	....	5.1	0.3	37
skimmed, condensed, sweetened	28.7	2.1	9.1	....	59.1[2]	1.0	282
Buttermilk[3]	90.4	0.8	3.6	....	4.1	0.5	35
Kephir	....	....	3.1	....	1.6	2.0	37
Kumiss[4]	89.3	0.4	2.8	....	5.4	2.1	51
Cream, "heavy" (approx. 40 per cent)	54.9	0.5	2.1	....	1.5	41.0	383
"heavy", sour, Jewish	50.5	0.5	4.1	....	1.5	41.6	397
"light" (approx. 20 per cent)	71.9	0.6	2.8	....	2.7	22.0	220
Whey	93.0	0.7	1.0	....	5.0	0.3	27
Milk powder:							
From whole milk	5.9	6.0	25.3	....	37.5	25.3	479
From partly skimmed milk (Mammala type)	4.0	5.8	25.8	....	49.9	14.5	433
From skimmed milk	4.5	8.1	34.6	....	50.9	1.9	359
Malted milk	4.0	3.5	13.8	....	71.9	6.8	404
Cheese:							
American, pale	31.6	3.4	28.8	....	0.3	35.9	440
red	28.6	3.5	29.6	....	....	38.3	463
Camembert	....	....	21.0	....	....	21.7	279
Cheddar	34.3	3.6	26.4	....	3.0	32.7	412
Cheshire	32.6	4.3	32.5	....	4.5	26.1	383
Cottage	72.0	1.8	20.9	....	4.3	1.0	110
Cottage, Jewish[5]	59.4	2.0	27.9	....	....	9.2	194
Dutch	35.2	10.0	37.1	....	....	17.7	308
Edam	36.1	4.9	24.1	....	4.6	30.3	388
Full Cream	38.2	4.1	25.4	....	2.0	30.3	382
Limberger	42.1	5.1	23.0	....	0.4	29.4	358
Neufchatel	50.0	2.4	18.7	....	1.5	27.4	327
Pineapple	23.0	5.6	29.9	....	2.6	38.9	480
Roquefort	39.3	6.8	22.6	....	1.8	29.5	363
Skimmed milk	45.7	4.2	31.5	....	2.2	16.4	282
Swiss	31.4	4.8	27.6	....	1.3	34.9	430
Ice Cream, typical	63.3	0.7	3.8	....	19.6	12.6[6]	207

[1] Cane sugar 40.6 per cent; milk sugar 14.0 per cent.
[2] Cane sugar 40.9 per cent; milk sugar 18.2 per cent.
[3] Contains 0.8 per cent lactic acid.
[4] Contains about 0.8 per cent alcohol — Kumiss from cows' milk contains protein 4.1 per cent; lactose 5 per cent; fat (calculated) 1.2 per cent. (Leach, Food Inspection and Analysis).
[5] One sample.
[6] Standards for fat in different States vary from 8 to 14 per cent.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Fats and Oils							
Butter, etc.:	%	%	%	%	%	%	
Butter, average	12.3	1.6[1]	1.5	....	none	84.6	767
Oleomargarine, average	5.4	1.4[2]	0.8	....	none	92.4	835
Vegetable oil margarine (nut margarine), average	10.9	2.9[3]	1.4	....	none	84.8	769
Salad oils and cooking fats (olive oil, Wesson oil, Mazola, lard, cottolene, crisco, etc.) typical	trace	trace	trace	....	none	99.7	897
Soups and Broths							
Soups, homemade:							
Bean	84.3	1.7	3.2	....	9.4	1.4	63
Beef	92.9	1.2	4.4	....	1.1	0.4	26
Chicken	84.3	2.0	10.5	....	2.4	0.8	59
Clam chowder	88.7	2.0	1.8	....	6.7	0.8	41
Meat stew	84.5	1.1	4.6	....	5.5	4.3	79
Soups, broths, etc., canned:							
Asparagus, cream of	87.4	1.4	2.5	....	5.5	3.2	61
Bouillon, beef	96.6	0.9	2.2	....	0.2	0.1	11
clam	95.2	3.1[4]	1.0	....	0.6	0.1	7
Celery, cream of	88.6	1.5	2.1	....	5.0	2.8	54
Chicken gumbo	89.2	1.4	3.8	....	4.7	0.9	42
soup	93.8	1.0	3.6	....	1.5	0.1	21
Consomme	95.9	2.2	1.4	....	0.4	0.1	8
Corn, cream of	86.8	1.0	2.5	....	7.8	1.9	58
Julienne	95.9	0.5	2.7	....	0.5	....	13
Mock turtle	87.9	2.4	3.0	....	5.7	1.0	44
Mulligatawny	89.3	1.2	3.7	....	5.7	0.1	39
Oxtail, edible portion	85.4	2.5	3.7	....	7.1	1.3	55
Pea soup	86.9	1.2	3.6	....	7.6	0.7	51
Pea, cream of green	87.7	1.3	2.6	....	5.7	2.7	58
Tomato soup	90.0	1.5	1.8	....	5.6	1.1	40
Turtle, green	86.6	1.5	6.1	....	3.9	1.9	57
Vegetable	95.7	0.9	2.9	....	0.5	....	14
Bouillon cubes:							
as purchased	7.4	73.6[5]	11.4	....	5.8	1.8	85
prepared as directed	98.6	1.1	0.2	....	0.1	trace	1
Clam extract:							
as purchased	35.8	29.0[6]	23.2	....	11.8	0.2	142
prepared as directed[7]	98.6	0.6	0.5	....	0.3	trace	3
Yeast extract (Vegex), as purchased	32.5	23.5[8]	31.3	....	12.5[9]	0.2	177

[1] Average salt content, 1.6 per cent. Range 0.2 to 4.1 per cent.
[2] Average ash content, (largely salt), 0.9 per cent. Range 0.4 to 3.1 per cent.
[3] Average ash content, (largely salt), 2.9 per cent. Range 1.1 to 6.1 per cent.
[4] Salt content 2.7 per cent.
[5] Salt content 70.2 per cent.
[6] Salt content 20.8 per cent.
[7] Salt content 0.4 per cent.
[8] Salt content about 13 per cent.
[9] Undetermined nitrogen-free extract.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Cereal Products, etc.							
Alimentary Pastes:	%	%	%	%	%	%	
Macaroni (average)	10.3	1.3	13.4	....	74.1[1]	0.9	358
Macaroni, cooked	78.4	1.3	3.0	....	15.8[1]	1.5	89
Noodles	10.7	1.0	11.7	0.4	75.2	1.0	357
Spaghetti	10.6	0.6	12.1	0.4	75.9	0.4	356
Vermicelli	11.0	4.1	10.9	....	72.0[1]	2.0	350
Bread, soft:							
Bread, alfalfa	20.5	2.7	10.6	0.9	64.0	1.3	310
brown	43.6	2.1	5.4	....	47.1[1]	1.8	226
corn (johnny cake)	38.9	2.2	7.9	....	46.3[1]	4.7	259
Graham	35.7	1.5	8.9	1.1	51.0	1.8	256
peanut	24.6	3.8	33.6	5.5	19.7	12.8	328
rye	35.7	1.5	9.0	0.5	52.7	0.6	252
rye, Jewish	35.0	2.2	9.1	0.6	52.0	1.1	254
rye, whole	50.7	0.9	11.9	1.2	34.7	0.6	192
rye and wheat	35.3	1.0	11.9	....	51.5[1]	0.3	256
wheat (average)	35.3	1.1	9.2	0.5	52.6	1.3	259
wheat, gluten	40.4	1.8	25.0	0.3	28.9	3.6	248
wheat, whole	38.4	1.3	9.7	1.2	48.5	0.9	241
Buns, hot cross	36.7	0.9	7.9	....	49.7[1]	4.8	274
Biscuit, homemade	32.9	0.5	8.7	0.7	54.6	2.6	277
Maryland	24.6	1.3	8.4	1.3	58.8	5.6	309
soda	22.9	1.5	9.3	....	52.6[1]	13.7	371
Rolls, all analyses	29.2	1.1	8.9	0.6	56.1	4.1	297
Bread, hard, and crackers:							
Bread, toasted	24.0	1.7	11.5	....	61.2[1]	1.6	305
Zwieback	5.8	1.0	9.8	....	73.5[1]	9.9	422
Crackers, Boston (split)	7.5	1.9	11.0	0.8	70.3	8.5	402
butter	7.2	1.5	9.6	0.4	71.2	10.1	414
cream	6.8	1.7	9.7	0.6	69.1	12.1	424
egg	5.8	1.0	12.6	0.4	66.2	14.0	441
flatbread	9.8	1.2	14.9	....	73.6[1]	0.5	359
Graham	5.4	1.4	10.0	1.5	72.3	9.4	414
oatmeal	6.3	1.8	11.8	1.9	67.1	11.1	416
oyster	4.8	2.9	11.3	0.2	70.3	10.5	421
pilot	8.7	1.0	11.1	0.3	73.9	5.0	385
pretzels	9.6	4.0	9.7	0.5	72.3	3.9	363
saltines	5.6	2.6	10.6	0.5	68.0	12.7	429
soda	5.9	2.1	9.8	0.3	72.8	9.1	412
water	6.4	1.2	11.7	0.4	75.3	5.0	393
Pastry, etc:							
Cake, coffee	21.3	0.9	7.1	0.4	62.8	7.5	347
cup	15.6	1.0	5.9	0.3	68.2	9.0	377
frosted	18.2	2.1	5.9	....	64.8[1]	9.0	364
gingerbread	18.8	2.9	5.8	0.9	62.6	9.0	354
sponge	15.3	1.8	6.3	....	65.9[1]	10.7	385

[1] Includes fibre.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Cereal Products, etc.—*Continued*							
Pastry, etc.—*Concluded:*	%	%	%	%	%	%	
Cookies	8.1	1.5	7.0	0.5	73.2	9.7	408
Doughnuts	18.3	0.9	6.7	0.7	52.4	21.0	425
Fig bars	17.9	1.1	4.6	1.7	68.1	6.6	350
Ginger snaps	6.3	2.6	6.5	0.7	75.3	8.6	405
Lady fingers	15.0	0.6	8.8	0.2	70.4	5.0	362
Macaroons	12.3	0.8	6.5	1.1	64.1	15.2	419
Pie, apple	42.5	1.8	3.1	....	42.8[1]	9.8	272
cream	32.0	1.0	4.4	....	51.2[1]	11.4	325
custard	62.4	1.0	4.2	....	26.1[1]	6.3	178
lemon	47.4	1.5	3.6	....	37.4[1]	10.1	255
mince	41.3	2.5	5.8	....	38.1[1]	12.3	286
raisin	37.0	1.5	3.0	....	47.2[1]	11.3	303
squash	64.2	1.3	4.4	....	21.7[1]	8.4	180
Pudding, Indian meal	60.7	1.5	5.5	....	27.5[1]	4.8	175
rice custard	59.4	0.6	4.0	....	31.4[1]	4.6	183
tapioca	64.5	0.8	3.3	....	28.2[1]	3.2	155
Wafers, miscellaneous	6.6	1.6	8.7	0.4	74.1	8.6	409
vanilla	6.7	1.1	6.6	0.3	71.3	14.0	438
Breakfast foods:							
Barley preparations:							
Cream of Barley	9.2	1.4	11.1	0.6	76.1	1.6	363
Farwell & Rhines' Barley Crystals	9.9	1.2	11.5	0.9	75.2	1.3	359
Quaker Scotch Brand Pearled Barley	12.1	1.0	9.5	0.3	76.2	0.9	351
Corn (maize) preparations:							
Cerealine	11.2	1.5	6.9	0.1	79.9	0.4	351
E-C Corn Flakes, Toasted	12.1	2.2	6.6	0.2	78.6	0.3	344
F. S. Granulated Hominy	13.3	0.4	8.0	0.2	77.1	1.0	349
Hecker's Cream Hominy	11.7	0.3	9.8	0.5	77.3	0.4	352
H-O New Process Hominy	11.3	0.4	8.0	0.2	79.8	0.3	354
Jackson's Roman Meal	8.5	3.7	13.3	5.0	66.1	3.4	348
Jersey Corn Flakes	7.7	0.9	8.5	0.3	82.3	0.3	366
Kellogg's Toasted Corn Flakes	11.7	2.7	6.4	0.2	78.8	0.2	343
Korn Kinks	12.0	2.2	7.4	0.1	77.9	0.4	345
Nichols' Snow White Samp	13.4	0.3	7.8	0.5	77.7	0.3	345
Post Toasties	11.7	1.8	6.6	0.2	79.4	0.3	347
Quaker Best Yellow Corn Meal	12.3	0.5	7.5	0.2	78.7	0.8	352
Quaker Corn Puffs	12.0	0.4	8.7	0.1	78.5	0.3	352
Quaker Toasted Corn Flakes	11.6	1.3	6.8	0.0	79.9	0.4	350
Ralston Hominy Grits	11.3	1.0	9.0	0.4	75.4	2.9	364
Street's Perfection Hominy	12.4	0.4	7.9	0.1	77.9	1.3	355
Sunbeam Pearl Hominy	14.3	0.4	9.4	0.3	75.0	0.6	343
Sunseal Sunny Corn	12.3	0.4	8.3	0.4	78.2	0.4	350
Sunseal Cream Corn Meal	12.0	0.5	8.9	0.4	77.2	1.0	353

[1] Includes fiber.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Cereal Products, etc.—*Continued*							
Breakfast foods—*Continued:*							
Corn (maize) preparations—*Concl.*	%	%	%	%	%	%	
Sunseal Hominy Grits	11.6	0.5	8.5	0.4	77.8	1.2	356
Washington Corn Crisps	12.1	2.9	7.8	0.2	76.8	0.2	340
Quaker Hominy Grits	13.2	0.5	7.9	0.2	77.7	0.5	347
Oat preparations:							
Bestovotes	11.0	2.1	16.2	1.0	63.1	6.6	377
Bufceco Rolled Oats	11.1	2.0	15.1	1.0	64.0	6.8	378
Fruited Oats	9.7	3.3	13.1	1.3	68.2	4.9	369
Grandmother's Crushed Oats	10.7	1.9	14.9	0.6	65.4	6.5	380
Health Brand White Oats	10.9	2.0	13.8	1.0	64.5	7.8	383
Hecker's Cream Oat Meal	11.5	1.8	15.6	0.9	64.6	5.6	371
Hornby's Steam Cooked Oat Meal	10.6	1.7	16.1	0.8	64.1	6.7	381
Keen & Robinson's Granulated Scotch Oatmeal	10.4	1.9	13.7	0.8	64.1	9.1	393
Leggett's Premier 15 Minute Oat Flakes	11.3	1.8	17.2	0.6	63.7	5.4	372
McCann's Irish Oat Meal	9.2	1.8	15.1	0.3	64.9	8.7	398
Mother's Crushed Oats	10.9	1.6	15.6	0.9	64.9	6.1	377
Paw-Nee Rolled Oats	10.8	1.9	15.8	0.8	64.0	6.7	380
Purity Rolled Oats	13.5	2.0	16.3	1.0	61.1	6.1	365
Quaker Oats	10.8	1.9	15.9	0.9	64.5	6.0	376
Robinson's Patent Groats	8.4	1.8	12.8	0.7	67.7	8.6	399
Scotch Porage Oats	10.1	1.7	13.3	0.4	64.9	9.6	399
Sovereign 15 Minute Oat Flakes	10.8	2.0	16.5	0.9	64.0	5.8	374
White Rose Rolled Oats	10.3	1.9	14.3	0.7	64.8	8.0	388
Rice preparations:							
Comet Cereal	11.3	0.3	7.2	0.2	80.7	0.3	354
Cook's Flaked Rice	12.6	0.4	7.8	0.2	78.9	0.1	348
Cook's Malto Rice	11.3	0.6	7.6	0.1	80.2	0.2	353
Kellogg's Toasted Rice Biscuit	5.0	3.7	10.1	0.2	80.7	0.3	366
Kellogg's Toasted Rice Flakes	4.7	3.4	10.0	0.2	81.3	0.4	369
Milk Rice	12.3	3.2	6.9	0.2	77.2	0.2	338
Quaker Puffed Rice	12.2	0.4	7.6	0.1	79.5	0.2	350
Rye preparations:							
Cream of Rye	11.5	1.7	12.0	1.4	71.8	1.6	350
Kellogg's Toasted Rye Flakes	8.1	2.2	11.4	0.6	76.2	1.5	364
Ry-Krisp	5.8	2.8	14.0	1.3	74.4	1.7	369
Wheat preparations:							
Alber's Wheat Flakes Mush	11.5	1.6	11.1	0.3	73.4	2.1	357
Cero-Vita	4.6	3.5	8.9	0.3	82.0	0.7	370
Cinnamon Rusks	9.9	0.7	10.3	0.2	71.7	7.2	393
Cream of Wheat	13.1	0.6	11.5	0.2	73.7	0.9	349
Cresco Grits	11.1	0.6	17.8	0.5	68.6	1.4	358

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Cereal Products, etc.—*Continued*							
Breakfast foods—*Continued:*							
Wheat preparations—*Concluded:*	%	%	%	%	%	%	
Crystal Wheat	9.5	1.9	11.3	1.7	73.6	2.0	358
Dieto Rusks	6.4	1.5	15.9	1.0	66.1	9.1	410
Force	10.7	2.8	10.6	1.1	73.7	1.1	347
F. S. Farina (Quaker Farina)	13.7	0.4	10.2	0.2	74.6	0.9	347
Fruited Wheat	9.9	3.6	15.6	2.4	66.2	2.3	348
Grandmother's A. & P. Farina	12.9	0.6	10.8	0.1	75.0	0.6	349
Granola	6.1	2.3	13.9	0.6	76.3	0.8	368
Granose Biscuit	11.3	3.9	10.3	1.8	71.1	1.6	340
Granose Flakes	6.0	3.9	10.3	0.5	75.4	3.9	378
Grape Nuts	10.3	1.9	11.5	1.5	74.2	0.6	348
Hecker's Farina	12.7	0.6	10.0	0.1	75.9	0.7	350
Holland Rusk	11.0	1.3	12.1	0.1	70.4	5.1	376
Jireh Frumenty	6.2	1.4	12.3	1.1	77.3	1.7	374
Jireh Whole Wheat Farina	6.2	1.8	12.9	2.2	74.6	2.3	371
Kellogg's Breakfast Toast	7.7	1.6	13.6	0.3	74.9	1.9	371
Kellogg's Krumbles	10.0	2.6	12.0	1.9	72.3	1.2	348
Kellogg's Toasted Wheat Biscuit	5.8	2.4	14.2	1.5	74.7	1.4	368
Kellogg's Toasted Wheat Flakes	5.2	2.7	9.3	1.2	80.5	1.1	369
Kellogg's Zwieback	6.2	1.6	14.3	0.2	76.1	1.6	376
Leggett's Premier Farina	14.1	0.5	11.1	0.1	73.3	0.9	346
Malt Breakfast Food	9.6	1.4	13.8	1.0	72.7	1.5	360
Manana Gluten Breakfast Food	7.6	2.5	42.6	1.7	43.6	2.0	363
Mapl-Flake	10.8	2.8	9.3	1.2	74.7	1.2	347
McCormick's Sunwheat Biscuits	5.7	5.7	11.4	1.4	63.3	12.5	411
Mother's Wheat Hearts	13.5	0.4	10.7	0.2	74.1	1.1	349
Pettijohn's Breakfast Food	10.3	1.7	9.1	2.0	74.9	2.0	354
Pillsbury's Best Cereal	11.3	0.5	11.5	0.1	75.9	0.7	356
Quaker Cracked Wheat	11.7	1.7	9.3	1.7	73.3	2.3	351
Quaker Puffed Wheat	11.5	1.8	13.1	1.6	70.2	1.8	349
Quaker Wheat Berries	9.8	1.4	14.0	1.2	71.6	2.0	360
Ralston Health Food	12.4	1.4	11.9	1.1	71.5	1.7	349
Ralston Wheat Food	11.9	1.1	11.3	0.8	73.1	1.8	354
Sanitas Granuto	4.9	1.3	10.1	0.4	81.6	1.7	382
Saxon Wheat Food	9.8	0.8	12.8	0.5	74.4	1.7	364
Shredded Wheat Biscuit	8.5	1.5	11.0	2.6	75.0	1.4	357
Street's Perfection Farina	13.1	0.5	10.3	0.1	74.9	1.1	351
Triscuit	10.3	1.7	11.0	1.7	73.9	1.4	352
Vitos	11.6	0.5	11.1	0.2	75.6	1.0	356
Wheatena	10.4	0.7	11.3	0.6	74.2	2.8	367
Wheatlet	12.2	0.8	12.8	0.3	72.3	1.6	355
Whole Grain Wheat (prepared)	66.2	1.5	6.6	1.2	23.7	0.8	128
Zest	10.7	2.6	9.0	1.2	75.3	1.2	348
Wheat bran:							
Ballard's Obelisk Sanitary Edible Bran	11.5	4.5	17.3	5.6	55.7	5.4	301
Culp's Capitol Health Bran	11.2	5.3	13.4	8.2	57.6	4.3	323

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Cereal Products, etc.—*Continued*							
Breakfast Foods—*Concluded:*							
Wheat Bran—*Concluded:*	%	%	%	%	%	%	
Health Food Co.'s Wheat Bran	11.6	5.6	14.3	8.2	56.2	4.1	319
Jireh Wheat Bran	11.1	4.3	16.8	6.3	56.7	4.8	337
Johnson's Educator Wheat Bran	11.6	6.1	15.4	7.8	54.4	4.7	322
Kellogg's Sterilized Wheat Bran	9.6	6.0	16.3	8.5	54.4	5.2	330
Wheat bran biscuit and other laxative preparations:							
Bran Biskue	8.5	3.1	12.1	2.2	61.0	13.1	410
Bran-eata Biscuit	9.8	4.4	9.1	3.6	72.2	0.9	333
Bran Zos	11.9	3.0	13.2	3.8	65.6	2.5	338
Brose Good Health Breakfast Food	10.1	2.6	14.4	3.1	65.5	4.3	358
Cerag	9.2	3.6	11.3	2.0	73.0	0.9	345
Cerena	7.2	4.9	27.8	2.4	46.3	11.4	399
Christian's Laxative Bread	9.9	2.8	10.0	1.3	74.6	1.4	351
Christian's Laxative Cereal Flakes	13.0	1.7	10.4	1.0	72.5	1.4	344
Colax	13.1	2.1	1.1	0.1	82.8	0.8	343
Dietetic Bran Biscuit	9.3	5.0	9.9	1.7	69.1	5.0	361
Educator Bran Cookies	7.1	3.3	8.9	1.5	64.7	14.5	425
Educator Bran Meal	11.8	2.9	12.3	3.8	66.4	2.8	340
F. B. A. Laxative Health Biscuit	11.1	3.1	6.1	0.7	77.3	1.7	349
Fruit Nut Cereal	7.3	3.2	13.5	2.4	72.4	1.2	354
Good Health Biscuit (Kellogg)	10.9	4.2	7.7	1.5	74.5	1.2	340
Health Food Wafers	9.7	5.3	10.0	1.4	65.7	7.9	374
India (Digestive) Biscuit	8.7	5.0	12.8	5.2	66.1	2.2	335
Laxa	6.6	5.0	12.4	6.6	66.6	2.8	341
Laxative Biscuit (Kellogg)	9.4	3.0	16.7	2.4	57.7	10.8	395
Mansfield's Agar Agar Wafers	7.9	2.3	7.1	0.8	69.9	12.0	416
Oval Digestive Biscuit (H.&P.)	8.8	2.1	7.8	0.5	64.5	16.3	436
Uncle Sam Health Food	6.3	3.1	21.3	4.0	40.9	24.4	468
Zim	13.2	2.0	7.4	1.5	74.2	1.7	342
Miscellaneous preparations:							
Dieto Nut Cereal	5.0	2.0	21.6	1.2	51.8	18.4	459
Dieto Wheat and Barley Cereal	6.8	1.7	11.6	2.0	75.7	2.2	369
Jireh Wheat Nuts	7.6	2.3	19.0	1.0	54.5	15.6	434
Malabar Manoca	13.3	1.3	0.6	0.6	84.1	0.1	340
Post Tavern Porridge	12.7	1.5	10.3	0.2	74.5	0.8	346
Post Tavern Special	9.9	0.9	10.9	0.3	76.9	1.1	361
Sea Moss Farina	15.6	13.6	9.1	1.5	59.9	0.3	279
Sunbeam Tapioca	13.5	0.2	0.6	0.1	85.5	0.1	345
Trix	6.2	1.5	14.5	0.3	77.3	0.2	369
Trufood (Trufood Co.)	5.7	1.4	11.5	1.8	77.1	2.5	377
Zed Biscuits	2.9	4.6	10.3	2.5	64.2	15.5	438
Zep (Battle Creek Food Co.)	5.0	2.9	14.0	1.3	74.6	2.2	374

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Cereal Products, etc.—*Concluded*							
Flours, meals, etc.:	%	%	%	%	%	%	
Barley flour	11.4	1.6	12.3	1.0	71.3	2.4	356
Buckwheat flour	13.6	0.9	6.4	0.4	77.5	1.2	346
Corn flour	12.3	0.9	8.4	0.4	76.2	1.8	355
Corn meal	12.5	1.0	9.2	1.0	74.4	1.9	362
Oat flour	10.3	1.8	15.1	0.7	65.7	6.4	381
Potato flour	16.0	0.4	0.5	....	83.0	0.1	335
Rice flour	11.9	0.8	7.3	0.1	79.3	0.6	352
Rye flour	12.9	0.7	6.8	0.4	78.3	0.9	349
Rye meal	11.4	1.5	13.6	1.8	69.7	2.0	351
Soy bean flour	5.1	4.5	42.5	3.7	24.3	19.9	446
Soy bean meal	10.1	5.5	38.3	4.6	26.6	14.9	394
Wheat flour, entire	11.4	1.0	13.8	0.9	71.0	1.9	356
Wheat flour, Graham	11.3	1.8	13.3	1.9	69.5	2.2	351
Wheat flour, patent, average	12.0	0.5	11.4	0.3	74.8	1.0	354
Wheat gluten flour, average	8.4	0.8	42.1	0.4	46.4	1.9	363
Vegetables							
Vegetables, fresh (unless otherwise stated):							
Amaranth, leaves and stems	88.6	2.2	3.0	1.0	4.6	0.6	36
Aralia Cordata (Udo)	95.2	0.5	1.0	0.5	2.6[1]	0.2	16
Artichokes, Globe or French	83.0	1.0	2.9	0.8	11.9	0.4	63
Jerusalem, fresh, whole	77.8	2.0	2.9	0.8	16.4[2]	0.1	78
cooked, edible portion	78.8	1.4	2.4	0.8	16.5[2]	0.1	77
Asparagus	93.6	0.7	2.1	0.7	2.7	0.2	21
Bamboo shoots	91.3	0.8	2.5	0.8	4.3	0.3	30
Basella, leaves and stems	....	....	2.0	....	2.4	0.3	20
Beans, butter	58.9	2.0	9.4	....	29.1[3]	0.6	159
cranberry, young pods	....	....	0.4	....	0.6	none	4
medium	....	....	1.3	....	1.7	0.6	17
fancy	....	....	1.0	....	2.1	0.1	13
lima	68.5	1.7	7.1	1.7	20.3	0.7	116
refugee, young pods	....	....	0.5	....	0.8	none	5
medium	....	....	1.3	....	3.0	0.1	18
fancy	....	....	1.1	....	1.4	0.1	11
soy, green, shelled	64.7	2.2	13.6	2.2	11.0	6.3	155
string	89.2	0.8	2.3	1.9	5.5[4]	0.3	34
string, cooked	95.3	0.9	0.8	....	1.9[3]	1.1	21
Beets	87.5	1.1	1.6	0.9	8.8[5]	0.1	43
cooked	88.6	1.6	2.3	....	7.4[3]	0.1	40
Borage (salad plant)	....	....	3.0	....	0.4	0.4	17
Broccoli	89.9	1.1	3.3	1.3	4.2	0.2	32
Brussels sprouts	....	....	4.4	....	7.6	0.5	53
Burdock, leaves	....	....	4.5	....	7.4	0.1	49
roots	....	....	3.0	....	21.1	0.1	97
Cabbage	91.5	1.0	1.6	1.1	4.5[6]	0.3	27
Chives	....	....	1.2	....	2.4	0.1	15
Carrots	88.2	1.0	1.1	1.1	8.2	0.4	41
Cassava, root	....	....	1.6	....	27.1	0.2	117

[1] Includes 1.1 per cent starch and sugar.
[2] Chiefly inulin.
[3] Includes fiber.
[4] Carbohydrate range 3.9 to 10 per cent.
[5] Carbohydrate range 6.0 to 10 per cent.
[6] Carbohydrate range 3.0 to 6.5 per cent.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Vegetables—*Continued*							
Vegetables, fresh—*Continued*	%	%	%	%	%	%	
Cauliflower	92.3	1.0	1.8	1.0	3.4	0.5	27
Celeriac	....	....	1.8	....	6.0	0.2	33
Celery	93.7	1.1	1.3	0.7	3.0	0.2	19
Celery root	....	....	2.0	....	6.3	0.4	37
Chard (Swiss), leaves	91.0	1.2	2.6	0.8	4.0	0.4	30
Chayote (tayote) fruit	91.9	0.4	0.9	0.8	5.9	0.1	28
leaves	91.0	1.2	3.2	1.4	2.5	0.7	29
roots	77.4	1.1	1.8	0.8	18.8	0.1	91
Chenopodium	....	....	8.5	....	2.7	1.1	55
Chicory, root	....	....	....	....	15.0	....	....
leaves, Italian	....	....	1.6	....	2.1	0.3	18
Chinese vegetables:							
Kai Tsoi	94.5	1.1	1.7	0.7	1.8	0.2	16
Bak Toy	95.9	1.1	1.2	0.6	1.1	0.1	10
Chives, bulbs and top	86.0	1.8	3.8	2.0	5.8	0.6	44
Collards	87.1	1.5	4.5	....	6.3[1]	0.6	49
Corn, green	75.4	0.7	3.1	0.5	19.2	1.1	99
Cucumbers	95.5	0.5	0.8	0.7	2.3	0.2	14
Dasheen, corms and tubers	66.6	1.4	2.9	0.7	28.2	0.2	126
leaves and stems	87.8	1.6	2.7	1.4	5.8	0.7	40
Dock, leaves and stems	93.3	0.9	2.1	0.8	2.6	0.3	22
Egg plant	92.9	0.5	1.2	0.8	4.3	0.3	25
Endive, leaves	....	....	1.6	....	3.2	0.2	21
Finnochio	....	....	1.5	....	1.6	0.1	13
Garlic	74.2	1.2	4.4	1.0	19.0	0.2	95
Greens, beet, cooked	89.5	1.7	2.2	....	3.2[1]	3.4	52
dandelion	85.8	2.0	2.7	1.8	7.0	0.7	45
turnip salad	86.7	2.2	4.2	....	6.3[1]	0.6	47
Kale	....	....	3.9	....	6.0	0.6	45
Kale, sea	....	....	1.5	....	3.5	0.2	22
Kohl-rabi	91.1	1.3	2.0	1.3	4.2	0.1	26
Lamb's quarters	....	....	3.8	....	5.7	0.7	44
Leeks	....	....	2.9	....	4.0[2]	0.1	29
Lettuce	94.7	0.9	1.2	0.7	2.2	0.3	16
Mushrooms	88.1	1.2	3.5[3]	0.8	6.0[3]	0.4	42
Mustard, greens	....	....	2.3	....	3.2	0.3	26
Okra	89.8	0.8	1.8	1.0	6.4	0.2	35
Onions	87.6	0.6	1.6	0.8	9.1	0.3	46
cooked	91.2	0.9	1.2	....	4.9[1]	1.8	41
Orach	88.0	2.4	4.5	1.0	3.7	0.4	36
Oyster plant	....	....	1.2	....	7.0	0.1	34
Palmetto cabbage	87.4	1.7	3.3	0.9	6.1	0.6	43
cooked	88.9	1.2	2.9	0.9	5.6	0.5	39
Parsley, leaves	83.9	2.4	3.7	1.8	7.2	1.0	53
Parsnips	83.0	1.4	1.6	2.5	11.0[4]	0.5	55
Patience (Rumex Patientia)	....	....	2.1	....	0.1[2]	0.2	11
Peas, green,							
cooked	73.8	1.5	6.7	....	14.6[1]	3.4	116
young	81.4	0.8	5.4	1.8	10.3	0.3	65
medium	75.8	0.9	6.5	2.2	14.2	0.4	86

[1] Includes fiber.
[2] Starch and sugar.
[3] Largely unassimilable.
[4] Carbohydrate range 6 to 14 per cent.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Vegetables—*Continued*							
Vegetables, fresh—*Concluded*	%	%	%	%	%	%	
Peppers, Neapolitan	....	....	1.1	....	5.7	0.3	30
sweet, green	....	....	0.8	....	4.1	0.1	21
Potatoes	78.3	1.0	2.2	0.4	18.0	0.1	82
air (tropical Asia)	....	....	1.9	....	16.3	0.4	76
boiled	75.5	1.0	2.5	0.6	20.3	0.1	92
Potatoes, cooked, chips	2.2	4.5	6.8	....	46.7[1]	39.8	572
cooked, mashed and creamed	75.1	1.5	2.6	....	17.8[1]	3.0	109
sweet	69.0	1.1	1.8	1.3	26.1	0.7	118
cooked	51.9	0.9	3.0	....	42.1[1]	2.1	199
Pumpkins	90.8	0.6	1.2	1.2	6.0	0.2	31
Purslane	93.2	1.5	1.6	0.8	2.5	0.4	20
Radishes (carbohydrate range, 2.7–7.5 per cent)	91.8	1.0	1.3	0.7	5.1	0.1	27
Rhubarb	94.4	0.7	0.6	1.1	2.5	0.7	19
Roquette (rocket salad)	....	....	1.1	....	2.6	0.2	22
Rutabagas (carbohydrate range, 3–12 per cent)	88.9	1.1	1.3	1.2	7.3	0.2	36
Sauerkraut	88.8	5.2[2]	1.7	....	3.8[1]	0.5	27
Sorrel (dock)	....	....	2.1	....	2.6	0.3	22
Spinach	92.3	2.1	2.1	0.9	2.3	0.3	20
cooked	89.8	1.4	2.1	....	2.6[1]	4.1	56
Squash	88.3	0.8	1.4	0.8	8.2	0.5	43
Tomatoes, green	94.8	0.6	1.2	0.4	2.8	0.2	18
ripe	94.3	0.5	0.9	0.6	3.3	0.4	20
juice	94.4	1.1	0.8	0.2	3.5	....	....
Truffles	....	....	9.1[3]	....	7.0[4]	0.5	....
Turnips	89.6	0.8	1.3	1.3	6.8	0.2	34
Vegetable marrow	93.1	1.1	0.5	1.2	4.0[5]	0.1	19
cooked	93.0	1.0	0.4	1.4	4.1[6]	0.1	19
Watercress	....	....	1.7	....	2.8	0.3	21
Yams	....	....	2.1	....	23.3	0.2	103
Vegetables, dried:							
Beans	12.6	3.5	22.5	4.4	55.2	1.8	327
carob	4.0	2.7	6.3	5.7	80.7	0.6	353
frijoles (New Mexico)	7.5	4.2	21.9	....	65.1[1]	1.3	360
Lima	10.4	4.1	18.1	....	65.9[1]	1.5	350
mesquite	4.8	3.4	12.2	....	77.1[1]	2.5	380
soy	10.1	5.5	38.3	4.6	26.6[7]	14.9	394
Carrots, evaporated	3.5	4.9	7.7	....	80.3[1]	3.6	384
Lentils	8.4	5.7	25.7	....	59.2[1]	1.0	349
Peas	9.5	2.9	24.6	4.5	57.5	1.0	337
cow	13.0	3.4	21.4	4.1	56.7	1.4	325
Peppers, green	....	....	15.5	....	63.0[1]	8.5	391
red	....	....	9.4	....	70.0[1]	7.7	387
Potatoes, evaporated	7.1	3.1	8.5	....	80.9[1]	0.4	361
Tomatoes	7.3	9.4	12.9	....	62.3[1]	8.1	374
Vegetables, canned:							
Artichokes (carbohydrate range, 3.2–6.1 per cent)	92.5	1.7	0.8	0.6	4.4	....	21
Asparagus (carbohydrate range, 1.6–3.3 per cent)	94.4	1.2	1.5	0.5	2.3	0.1	16

[1] Includes fiber.
[2] Largely salt.
[3] Largely non-protein.
[4] Largely unavailable.
[5] 1.8 per cent starch and sugar.
[6] 2.0 per cent starch and sugar.
[7] About one-fourth available.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Vegetables—*Continued*							
Vegetables, canned—*Concluded:*	%	%	%	%	%	%	
Beans, baked	68.9	2.1	6.9	2.5	17.1	2.5	119
haricots verts	95.2	1.1	1.1	0.5	2.0	0.1	13
flageolets (carbohydrate range, 9.8–12.4 per cent)	81.6	1.2	4.6	1.0	11.5	0.1	65
Lima (carbohydrate range) 9.6–16.5 per cent)	79.5	1.6	4.0	1.2	13.4	3.0	97
little green	93.8	1.5	1.2	0.6	2.8	0.1	17
red kidney	72.7	1.6	7.0	1.2	17.3	0.2	99
string (carbohydrate range, 1.5–4.5 per cent)	93.7	1.3	1.1	0.5	3.3	0.1	19
wax	94.6	1.2	1.0	0.6	2.5	0.1	15
Brussels sprouts	93.7	1.3	1.5	0.5	2.9	0.1	19
Corn (carbohydrate range, 11.7–25.1 per cent)	76.1	0.9[1]	2.8	0.8	18.2	1.2	95
Corn and tomatoes	87.6	0.8	1.6	0.5	9.1	0.4	46
Macedoine (mixed vegetables)	93.1	1.0	1.4	0.6	3.9	....	21
Okra	94.4	1.2[2]	0.7	0.7	2.9	0.1	15
Peas (carbohydrate range, 4.3–17.2 per cent)	85.3	1.1[3]	3.6	1.2	8.6	0.2	51
Potatoes, sweet	55.2	1.1	1.9	0.8	40.6	0.4	174
Pumpkins (carbohydrate range, 3.6–7.3 per cent)	91.6	0.7	0.8	1.1	5.6	0.2	27
Squash (carbohydrate range, 3.6–12.8 per cent)	87.6	0.5	0.9	0.7	9.8	0.5	47
Succotash (carbohydrate range, 13.9–21.3 per cent)	75.9	0.9	3.6	0.9	17.7	1.0	94
Tomatoes (carbohydrate range, 1–4.5 per cent)	94.0	0.6	1.2	0.5	3.5	0.2	21
Pickles, Condiments, etc.							
Pickles, condiments, etc.:							
Capers	....	....	3.2	....	5.0	0.5	37
Catsup, tomato	....	....	1.8	....	10.0[4]	0.2	49
Chili sauce	....	....	....	....	20.0[5]	....	....
Horseradish	86.4	1.5	1.4	....	10.5[6]	0.2	49
Mayonnaise dressing (average of ten commercial brands)	16.0	1.6	1.7	....	2.9	77.8	719
Mineral oil dressing (average of three commercial brands)	17.5	0.7	1.3	....	4.5	76.0[7]	....
Olives, green, edible portion (ten samples)	76.4	6.6[8]	1.3	1.1	2.5	12.1	124
ripe, edible portion (eight samples)	75.0	2.7[9]	1.4	0.9	2.0	18.0	176
Mustard, prepared	....	....	4.7	....	5.0	4.1	76
prepared, with cereal added (carbohydrate range, 4–15 per cent)	....	....	3.5	....	7.0	1.9	59
Pickles, cucumber	92.9	3.6	0.5	....	2.7[6]	0.3	16
mixed	93.8	0.7	1.1	....	4.0[6]	0.4	24
spiced	....	....	0.4	....	21.0	0.1	87

[1] Includes about 0.4 per cent salt.
[2] Includes about 1.1 per cent salt.
[3] Includes about 0.7 per cent salt.
[4] Carbohydrate 3 to 26 per cent.
[5] Carbohydrate 14 to 28 per cent.
[6] Includes fiber.
[7] Practically all unavailable.
[8] Includes 5.9 per cent salt.
[9] Includes 2.1 per cent salt.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Pickles, Condiments., Etc.—*Concluded*							
Pickles, condiments, etc.—*Concluded:*	%	%	%	%	%	%	
Vinegar, cider	....	....	none	....	0.3[1]	none	1
distilled	....	....	none	....	none	none	....
malt	....	....	none	....	0.5[2]	....	....
spiced salad	....	....	....	....	10.0	....	....
Tarragon	....	....	....	....	0.2[2]	....	....
wine	....	....	....	....	0.4	....	....
Fruits, Berries, etc.							
Fruits, berries, etc., fresh:							
Apples, (carbohydrate range, 7–16 per cent)	84.6	0.3	0.3	1.2	13.9	0.4	60
Apple juice	87.1	0.3	0.1	....	12.5	....	50
Apricots	86.1	0.5	1.0	....	12.3	0.1	54
Avocados (alligator pears)	69.6	0.8	2.1	....	7.4	20.1	219
Bananas	75.3	0.8	1.3	1.0	21.0	0.6	95
Blackberries	86.3	0.5	1.3	2.5	8.4	1.0	48
Blueberries	83.4	0.3	0.6	1.2	13.9	0.6	63
Cherries	80.9	0.6	1.0	0.2	16.5	0.8	77
Citrang juice	....	....	1.3	....	6.9	....	33
Crabapples	81.2	0.4	0.4	0.6	17.1	0.3	73
Cranberries	88.9	0.2	0.4	1.5	8.4	0.6	41
Currants	87.8	0.7	1.6	....	9.5	0.4	48
Egg fruit	51.3	1.1	3.4	1.3	41.0	1.9	195
Figs	79.7	0.6	1.4	....	17.9	0.4	81
Gooseberries	....	....	0.8	....	7.6	0.4	37
Grapes	77.4	0.5	1.3	4.3	14.9	1.6	79
Grape juice (carbohydrate range, 11–20 per cent)	....	....	0.4	....	18.5	....	76
Grapefruit[3] (carbohydrate range, 6.6–8.2 per cent)	91.1	0.5	0.8	0.4	7.2	....	32
Grapefruit juice	....	....	0.4	....	9.8	0.1	42
Guavas	80.6	0.7	1.0	5.5	11.6	0.6	56
Huckleberries	81.9	0.3	0.6	....	16.6[4]	0.6	74
Lemons	89.3	0.5	1.0	1.1	7.4	0.7	40
Lemon juice	....	....	....	....	9.8	....	....
Limes	86.0	0.8	0.8	....	12.3	0.1	53
Lime juice	91.3	0.4	0.5	....	7.8	0.0	33
Loganberries[5]	....	....	4.6	....	7.2[6]	0.6	53
Loganberry juice[7]	....	....	0.6	....	6.8[6]	....	....
Loquat	74.8	1.2	0.3	0.7	23.0	....	....
Mangoes	....	....	0.7	....	16.2	0.2	69
Mulberries	....	....	1.2	....	12.6	0.6	61
Muskmelons	89.2	0.6	0.6	2.1	7.2	0.3	34
Nectarines	83.2	0.6	0.5	....	15.6	0.1	65
Oranges	87.8	0.5	0.9	....	10.6	0.2	48
Orange juice	....	....	0.6	....	13.1	....	55
Papaw	75.1	0.9	5.2	1.1	16.8	0.9	96
Papaya	88.7	0.6	0.6	0.9	9.1	0.1	40
Peaches	84.0	0.4	0.5	3.6	11.4	0.1	49

[1] Carbohydrate 0.3 to 1.5 per cent.
[2] Manufacturers' analysis.
[3] Florida, California and Puerto Rico, (E. M. Frankel).
[4] Includes fiber.
[5] Jour. Ind. and Eng. Chem., 1918, **10**, 30.
[6] Invert sugar.
[7] Jour. Ind. and Eng. Chem., 1917, **9**, 1043.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Fruits, Berries, etc.—*Concluded*							
Fruits, berries, etc., fresh—*Concluded:*	%	%	%	%	%	%	
Pears	84.4	0.4	0.6	2.7	11.4	0.5	53
Persimmons	66.1	0.9	0.8	1.8	29.7	0.7	128
Pineapple	85.4	0.3	0.4	0.4	13.3	0.2	57
Plums	86.2	0.5	0.7	....	12.4	0.2	54
Pomegranates	76.8	0.6	1.5	2.7	16.8	1.6	88
Prunes	77.0	0.6	0.9	....	21.3	0.2	91
Quince	84.2	0.4	0.3	1.8	13.2	0.1	55
Raspberries, black	80.7	0.6	1.5	3.5	12.1	1.6	69
red	83.4	0.5	1.1	2.8	11.6	0.6	56
Sapodilla	77.0	0.5	0.6	1.1	19.4	1.4	93
Sour sop	80.8	1.1	0.8	....	17.2	0.1	73
Strawberries	90.4	0.6	1.0	1.4	6.0	0.6	33
Tangelo juice	....	....	0.7	....	9.0	....	....
Watermelons	92.4	0.3	0.4	....	6.7[1]	0.2	30
Whortleberries	....	....	0.7	....	10.0	0.3	46
Fruits, berries, etc., dried:							
Apples	28.1	2.0	1.6	....	66.1[1]	2.2	291
Apricots	29.4	2.4	4.7	....	62.5[1]	1.0	278
Citron	19.0	0.9	1.5	....	78.1[1]	1.5	332
Currants	17.2	4.5	2.4	....	74.2[1]	1.7	322
Dates	15.4	1.3	2.1	....	78.4[1]	2.8	347
Figs	18.8	2.4	4.3	....	74.2[1]	0.3	317
Prunes	22.3	2.3	2.1	....	73.3[1]	....	....
Raisins	14.6	3.4	2.6	....	76.1[1]	3.3	345
Raspberries	8.1	2.6	7.3	....	80.2[1]	1.8	366
Fruits, berries, etc., canned; jellies and preserves[2]:							
Apples, crab	42.4	0.5	0.3	....	54.4[1]	2.4	240
Apple sauce	61.6	0.7	0.2	....	37.2[1]	0.8	157
Apricots	81.4	0.4	0.9	....	17.3[1]	....	....
Apricot sauce	45.2	2.8	1.9	....	48.8[1]	1.3	215
Bakapple (cloudberry)	84.3	0.5	1.9	3.3	9.7	0.3	49
Blackberries	40.0	0.7	0.8	....	56.4[1]	2.1	248
Blueberries	85.6	0.4	0.6	....	12.8[1]	0.6	59
Cherries	77.2	0.5	1.1	....	21.1[1]	0.1	90
Cherry jelly	21.0	0.7	1.1	....	77.2[1]	....	....
Figs, stewed	56.5	1.1	1.2	....	40.9[1]	0.3	171
Grape butter	36.7	3.5	1.2	....	58.5[1]	0.1	240
Grapefruit	90.5	0.4	0.5	0.2	8.3	0.1	36
Marmalade, orange	14.5	0.3	0.6	....	84.5[1]	0.1	341
Peaches	88.1	0.3	0.7	....	10.8[1]	0.1	47
Pears	81.1	0.3	0.3	....	18.0[1]	0.3	76
Pineapples	61.8	0.7	0.4	....	36.4[1]	0.7	154
Prune sauce	76.6	0.5	0.5	....	22.3[1]	0.1	92
Strawberries, stewed	74.8	0.5	0.7	....	24.0[1]	....	....
Tomato preserves	40.9	0.7	0.7	....	57.6[1]	0.1	234

[1] Includes fiber.
[2] Jams, jellies, preserves and marmalades contain 47 per cent or more carbohydrate. There is a wide variation in the sugar content of canned fruits. Fruits for special diets may be packed in water without added sugar; commonly they are packed in 30 to 50 per cent syrup.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Nuts							
	%	%	%	%	%	%	
Almonds	4.8	2.0	21.0	2.0	15.3	54.9	639
Almond butter	1.6	3.0	22.1	3.9	7.9	61.5	674
Beechnuts	4.0	3.5	21.9	....	13.2[1]	57.4	657
Brazil nuts	3.3	3.4	16.8	2.1	5.0[2]	69.4	712
Butternuts	4.4	2.9	27.9	....	3.5[1]	61.2	676
Cashew nuts	4.5	2.5	19.1	0.6	26.2[3]	47.1	605
Chestnuts	45.0	1.3	6.2	1.8	40.3	5.4	235
Coconut	14.1	1.7	5.7	....	27.9[1]	50.6	590
Coconut milk	92.7	0.8	0.4	....	4.6	1.5	34
prepared	3.5	1.3	6.3	....	31.5[1]	57.4	668
Filberts	3.7	2.4	15.6	....	13.0[1]	65.3	702
Hickory nuts	3.7	2.1	15.4	....	11.4[1]	67.4	714
Lichi nuts	17.9	1.5	2.9	....	77.5[1]	0.2	323
Peanuts	9.2	2.0	25.8	2.5	21.9	38.6	538
Peanut butter	2.1	5.0	29.3	....	17.1[1]	46.5	604
Pecans	2.7	1.9	9.6	....	15.3[1]	70.5	734
Pine nuts:							
Pignolias	5.8	4.2	36.5	0.8	4.8	47.9	596
Piniones	3.8	2.8	6.5	....	26.2[1]	60.7	677
Pinon	3.4	2.8	14.6	....	17.3[1]	61.9	685
Sabine	5.1	4.7	28.1	....	8.4	53.7	629
Pistache nuts	5.7	2.8	24.3	1.8	14.3	51.1	614
Walnuts, California	2.5	1.7	18.4	1.4	11.6	64.4	700
California, black	2.5	1.9	27.6	1.7	10.0	56.3	657
California, soft shell	2.5	1.4	16.6	2.6	13.5	63.4	691
Alcoholic Beverages[4]							
	%	%	%	%	%	%	
Beer (alcohol usually 3.0–5.0 per cent by weight)	....	....	0.5	....	5.0	trace	50
Ale (alcohol usually 4.0–6.0 per cent by weight)	....	....	0.5	....	5.2	trace	58
Porter (alcohol usually 4.0–5.0 per cent by weight)	....	....	0.6	....	6.3	....	60
Stout (alcohol usually 5.0–7.0 per cent by weight)	....	....	0.5	....	7.0	....	72
Malt Extract (alcohol 2.0–7.3 per cent by weight; carbohydrate range, 4.8–14.0 per cent)	....	....	0.7	....	7.1	....	65
Wines,[5] Dry (alcohol range 6.0–15.5 per cent by weight; carbohydrate range, 0.1–3.6 per cent)	....	....	0.2	....	0.3	....	....
Sweet (alcohol range, 10.0–24.0 per cent by weight)	....	....	....	....	8.0	....	....
California, Port type (carbohydrate range 0.2–13.6 per cent)	....	....	....	....	4.8	....	....
Madeira and Sherry types (carbohydrate range 0.1–17.2 per cent)	....	....	....	....	5.4	....	....

[1] Includes fiber.
[2] Includes 1.3 per cent water-soluble carbohydrate. No starch present.
[3] Includes 13.4 per cent starch and 6.8 per cent water-soluble carbohydrate.
[4] Calorie values for alcoholic beverages may be approximated by reckoning protein and carbohydrate as yielding 4 calories per gram, and alcohol 7.1 calories per gram.
[5] Natural wines contain less than 18 per cent alcohol by weight; wines containing over 18 per cent are usually fortified.

TABLE 18. ANALYSES OF COMMON FOODS—*Continued*

Description of food	Water	Ash	Protein	Fiber	Carbohydrate (other than fiber)	Fat	Calories per 100 gms.
Alcoholic Beverages—*Concluded*							
Wines—*Concluded:*	%	%	%	%	%	%	
French (carbohydrate range 0.7–12.4 per cent)	....	....	....	....	5.4	....	....
German (carbohydrate range 0.6–12.1 per cent)	....	....	....	....	4.6	....	....
Madeira (carbohydrate range 2.5–3.9 per cent)	....	....	....	....	3.0	....	....
Port (carbohydrate range 3.8–8.2 per cent)	....	....	....	....	6.0	....	....
Rhine (carbohydrate range 1.8–10.7 per cent	....	....	....	....	6.4	....	....
Champagne (carbohydrate range 6.5–18.5 per cent)	....	....	....	....	9.6	....	....
Tokay: True (carbohydrate range 1.9–20.5 per cent)	....	....	....	....	12.6	....	....
Commercial (carbohydrate range 2.7–40.7 per cent)	....	....	....	....	19.8	....	....
Vermouth (carbohydrate range 3.5–14.4 per cent)	....	....	....	....	4.5	....	....
Distilled liquors:							
Whiskey (alcohol 30–45 per cent by weight); Brandy (alcohol 21–51); Rum (alcohol 25–43); Gin (alcohol 30–43)	....	none	....	....	none[1]	none	....
Cordials (alcohol range, 30–50 per cent by weight)							
Absinthe	....	....	....	....	trace	....	....
Angostura	....	....	....	....	4.2	....	....
Crême de Menthe	....	....	....	....	27.7	....	....
Kümmel	....	....	....	....	31.2	....	....
Bénédictine	....	....	....	....	32.6	....	....
Anisette	....	....	....	....	34.4	....	....
Chartreuse	....	....	....	....	34.4	....	....
Maraschino	....	....	....	....	52.3	....	....
Tea (0.5 oz. to 1 pt. water)	....	....	....	....	0.6	....	....
Coffee (1 oz. to 1 pt. water)	....	....	....	....	0.7	....	....
Cocoa (0.5 oz. to 1 pt. water)	....	....	....	....	1.1	....	....
(0.5 oz. to 1 pt. milk)	....	....	....	....	6.0	....	....
Chocolate[2]	....	....	12.4	....	24.8[3]	52.2	....
Cocoa[2]	....	....	18.3	....	37.5[4]	26.7	....
Carbonated drinks (bottled soda, sarsaparilla, birch beer, root beer)	....	....	....	....	8.0	....	....
Ginger ale (sugar range 5.8–12.3)	....	....	....	....	9.0	....	....
Cider,[5] sweet	....	....	1.0	....	12.5	....	....

[1] Sugar is sometimes added to brandy.
[2] Analysis of the food itself; not as prepared for drinking. Sweetened chocolate contains from 50 to 60 per cent of sugar; sweetened cocoa contains from 25 to 50 per cent of sugar.
[3] Starch and sugars about 10 per cent; availability of remainder undetermined.
[4] Starch and sugars about 14 per cent; availability of remainder undetermined.
[5] Sugar decreases as fermentation proceeds. Well fermented cider will contain less than 1 per cent of sugar and about 5 per cent of alcohol.

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